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IDENTIFIERS DISCOVER

ABSTRACT

Based on the Computerized Vocational Information System (CVIS), Project DISCOVER was conceptualized in three parts: Guidance subsystem for direct use by individuals at three age levels (grades 4-6, grades 7-12, and adult) seeking career guidance; the counselor-support subsystem; and the administrator support subsystem. Guidance development and technical development were the two components of the project from July 1, 1974 to August 31, 1975. This report describes the project in two sections, according to its two components. Overall project objectives are contained in the first section (Guidance Development) along with a discussion of accomplishments, major activities and events, problems, and publicity activities. The second section (Technical Development) covers technical aspects of accomplishments, major activities and events, problems, publicity, dissemination, other activities, staff employment and utilization, and staff development. Modules which were developed and input into the computer system are described. Appendixes contain the following materials: Monthly progress reports, advisory board meeting minutes, guidelines for script preparation, field test site selection and evaluation plan, outline of inservice training program for counselors, contracts with publishers, plan for dissemination and maintenance of DISCOVER, budget, suggested division of funds, abstract and newsletter, DISCOVER system flowcharts, data base descriptions, administrative applications, and list of DISCOVER programming support functions. (TA)

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DISCOVER:
A Computer-Based Career Guidance and Counselor-Administrative Support System

F I N A L R E P O R T

July 1974 - August 1975

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CE 010 280

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OUTLINE FOR PROGRAM PERFORMANCE REPORTS
ADULT, VOCATIONAL, AND EDUCATION PROFESSIONS DEVELOPMENT ACT (EPDA) PROGRAMS

1. PROJECT NO.:	2. GRANT NO.:
V0132VZ	OEG-0-74-1751

3. TITLE OF PROJECT:
DISCOVER: A Computer-based Career Guidance & Counselor-Administrative Support System

4. GRANTEE ORGANIZATION:	5. PROJECT DIRECTOR:
Northern Illinois University	JoAnn Harris-Bowlsbey

6. PERIOD COVERED: FROM	TO
July 1, 1974	August 31, 1975

7. ACCOMPLISHMENTS *(including significant findings)* DURING THIS PERIOD. *(Key to approved project objectives. For educational personnel training programs, include progress made toward placement of trainees and institutionalization of programs.)*

included as a part of section 8.

8. MAJOR ACTIVITIES AND EVENTS.

9. PROBLEMS.* *(Describe any departures, including timing, from the original project plan; discuss special problems encountered or expected.)*

10. PUBLICITY ACTIVITIES.* *(Itemize all newspaper or magazine articles or other published materials about your project. A copy of each item should be attached. List all visits to the project site by educators from other organizations.)*

11. DISSEMINATION ACTIVITIES.* *(Describe method of dissemination; identify recipients of dissemination activities.)*

12. PROGRESS ON DATA COLLECTION AND EVALUATION PLANS AND PROCEDURES.*

N/A

13. OTHER ACTIVITIES.*

N/A

14. STAFF EMPLOYMENT AND UTILIZATION.* *(Note any changes in staff personnel or staffing plans by additions, departures, or revisions of percentage of time or other commitments to the project.)*

15. STAFF DEVELOPMENT.* *(Describe any inservice training for teachers, counselors, and supervisors and any other activities of a professional nature for project staff.)*

N/A

* IF THERE IS NOTHING TO REPORT IN THIS SECTION, WRITE N/A.

16. PARTICIPANT CHARACTERISTICS:

a. FOR ADULT EDUCATION TEACHER TRAINING *(13.402)* AND ALL EDUCATION PROFESSIONS DEVELOPMENT PROGRAMS *(13.418, 13.417, 13.503, 13.504, 13.505, 13.506, 13.545, and 13.546)* PROVIDE THE FOLLOWING DATA FOR PARTICIPANTS:

PARTICIPANTS	AMERICAN INDIAN		ORIENTAL		NEGRO/ BLACK		SPANISH-SURNAMED		ALL OTHERS		TOTALS
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
PRIMARY[1]											
ADMINISTRATORS											
GUIDANCE COUNSELORS											
TEACHER COUNSELORS											
TEACHER MEDIA SPECIALISTS											
TEACHER TRAINERS											
TEACHERS											
PARAPROFESSIONALS											
OTHERS *(Specify)*											
SECONDARY[2]											
TOTALS											

1 PARTICIPANTS FOR WHOM THE TOTAL PROJECT WAS DESIGNED
2 PARTICIPANTS WHO RECEIVED PARTIAL, SHORT-TERM, OR INTERMITTENT TRAINING.

b. FOR ADULT EDUCATION SPECIAL PROJECTS *(13.401)* PROVIDE THE FOLLOWING DATA FOR TARGET GROUPS:

AGE GROUPS	AMERICAN INDIAN		ORIENTAL		NEGRO/ BLACK		SPANISH-SURNAMED		ALL OTHERS		TOTALS
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
16 - 24											
25 - 34											
35 - 64 OR OVER											
TOTALS											

SIGNATURE OF PROJECT DIRECTOR: John Lewis Bradley DATE: September 15 1975

GSA DC 75-4852

INTRODUCTION

Because DISCOVER project development is divided into two distinct components, Guidance Development and Technical Development, the Project Final Report has been written in two parts. The Guidance Development section of the report is keyed to the original project proposal and deals with overall objectives of the project, while the Technical Development section deals only with the technical aspects of the project. Each section of the report follows the suggested EDPA outline.

GUIDANCE DEVELOPMENT

VII. and VIII: Accomplishments, Major Activities, and Events

The accomplishments, major activities, and events for the July 1, 1974, to August 31, 1975, funding period proceeded in accord with the development schedule outlined in the funding proposal. A detailed, month-by-month account of these activities is included in the appendix of this report in the form of Monthly Progress Reports (see Appendix 1). The major accomplishments, activities, and events are summarized below and are keyed to the original proposal, section II (Description of the Project), sub-section C (Present State of Development and Projected Plans), pages 22-26.

***1. A national advisory board was established to assist with formulating the plans for the field trial; to assist with the formulation of the design of the field trial evaluation; to assist with the plans for dissemination, including the inservice training package and its supporting materials; and to review the additional scripting and work done during the 1974-1975 year. The following persons served on the advisory board during the 1974-1975 funding period:*

Dr. Donald Super, Columbia Teachers College
Dr. David Tiedeman, Northern Illinois University
Dr. John Holland, Johns Hopkins University
Dr. Dale Prediger, the American College Testing Program
Dr. T. Anne Cleary, College Entrance Examination Board
Dr. Bruce McKinlay, University of Oregon
Dr. Frank Benham, the IBM Corporation
Dr. Regina Wieman, Western Maryland College
Mr. James Augustine, Jr., President, AEDS
Mr. Sherwood Dees, Division of Vocational and Technical Education, State of Illinois
Ms. Margaret Long, Southern Maryland Information System
Mr. Walter O'Neill, the IBM Corporation
Mr. Niel Carey, Maryland State Department of Education

Two advisory board meetings were held, one on October 25, 1974, and the other on May 29-30, 1975. The minutes of the two meetings are included

in Appendix 2.

**2. Upon completion of the module design, each module was coded in detail on work sheets. This task involved the placement of individual frames (one screen display) on a prescribed work form along with detailed instructions about how the computer program should respond to each student alternative or response. A set of Guidelines for Script Preparation was developed, and script preparation was carried out in accord with these Guidelines (see Appendix 3 for a copy of the Guidelines). The process of script development placed heavy time demands on the guidance development staff as extensive revisions were necessary on nearly all modules. The table below provides a summary of progress made on the completion of module coding:

Module Name	First Revision	Second Revision	Final Typing	Coding Complete	Coding in Process
Entry	X	X	X	X"	
Understanding My Values	X	X	X	X	
Playing a Values Game	X	X	X		X
Learning to Make Decisions	X	X	X	X	
Practicing Career Decisions	X	X		X	
Learning How to Group Occupations	X	X	X	X	
Browsing Occupations	X	X	X	X	
Reviewing Interests & Strengths	X	X	X	X	
Making a List of Occupations to Explore	X	X	X	X	
Getting Information about Occupations	X	X	X	X	
Narrowing My List of Occupations	X	X	X	X	
Exploring Specific Career Plans	X	X			X
Local Jobs	X	X			X
Financial Aid	X	X			X
Apprenticeships	X	X	X	X	

	First Revision	Second Revision	Final Typing	Coding Complete	Coding in Process
Four-year College Information and Search	X	X	X	X	
Community and Junior Colleges	X	X	X	X	
Graduate and Professional Schools	X				X
Trade and Technical Schools	X	X	X	X	
Continuing Education	X	X		X	
Military	X	X		X	

A complete set of coding sheets for all completed modules is available upon request. Coding sheets are not included as a part of this report because of their enormous volume (well in excess of 1000 pages).

**3. An eminent advisory board for administrative functions was established. This board, under the direction of Mr. James Boyd, met and developed a list of nine administrative functions which will be incorporated into the DISCOVER Administrative System. These functions will include the following:

On-line access of student data base, including the ability to retrieve, update, add, and delete both records and fields within records

On-line changing of schedules, including adding and dropping of courses. This will be designed with current emphasis on individualized instruction in mind.

Master schedule maintenance.

Grade changes including updating and adding grades.

Limited on-line query capabilities on student data bases and DISCOVER-related data bases.

Statistical reports on specified elements of the data bases.

On-line attendance control.

On-line test scoring capability.

On-line entry of course requests.

Further details about the Administrative Support Subsystem are contained in the technical portion of the final report, page 12.

**4. Four new modules were conceptualized,designed,and are now in various stages of development as follows:

Entry Module	complete
Practicing Career Decisions	95% complete
Playing a Values Game	60% complete
Exploring Specific Career Plans	50% complete

**5. Modules of the system which were coded and programmed during the 1974-1975 funding period were field tested on a select population of students. The purpose of this limited in-house field test was to determine the appropriateness of each module with respect to

concept level
reading level
adequacy of instructions
adequacy of interactive dialogue
student appeal

The modules which have undergone in-house testing are:

Entry Module
Learning to Make Decisions
Learning how to Group Occupations
Browsing Occupations
Four-year College Information and Search

Upon the completion of testing, necessary on-line modifications were made.

**6. Because of the uncertainty of funding, two separate strategies for the selection of a field test site were developed. These two strategies (Plans A & B) are contained in Appendix 4, pages 1 and 2. Lack of adequate funding forced the adoption of plan A which calls for the field trial of DISCOVER in at least two schools (one inner city and one suburban). Ultimately the Baltimore City School System was chosen as the site for the field trial. Negotiations are currently underway to determine which Baltimore schools will participate in the trial.

**7. The evaluation plan was also conceived in two versions (Plan A & B) because of the uncertaintly of future funding. The plan A research and evaluation design presented in Appendix 4, pages 3 to 6, was selected as being most compatible with the funding available.

**8. An inservice training package for teachers and counselors has been outlined and materials are currently being assembled in support of this outline. The inservice training package will be field tested along with the other components of the system during the Baltimore City Field Trial. For details of the Inservice Training Program, see Appendix 5.

**9. All necessary arrangements have been made with Consulting Psychologist Press and with Dr. John Holland for the use of the Self-Directed Search on-line as an integral part of the "Reviewing My Interests and Strengths" module of the DISCOVER system. Specifics of this arrangement are spelled out in Appendix 6.

In addition, arrangements have also been made with the Houghton-Mifflin Company to use their CPP 8-11 materials in an on-line mode as an optional substitute for the Self-Directed Search. Specifics of this arrangement are spelled out in Appendix 7.

These arrangements will provide potential user sites with the option of choosing either the CPP 8-11 or the Self-Directed Search (SDS) for the assessment of user interests and competencies. Because the SDS has come under fire recently as being somewhat sex-biased, the guidance staff felt obligated to offer the CPP 8-11 as a less-biased alternative.

**10. Arrangements have been made with the Educational Testing Service and Martin Katz for the use of the ten work values he has identified as a part of the DISCOVER module entitled, "Understanding My Values." Specific details of this agreement are contained in Appendix 8.

**11. The data files necessary for system operation have been specified in detail, and arrangements have been made with several agencies to provide these data files. The table which follows provides a summary of progress on data file procurement.

FILE NAME	SOURCE	COST	COMPLETION DATE
4-year college file (all 4-year colleges)	the American College Testing Program	free	Aug. 1, '75
Community & Junior College (all two-year colleges)	the American College Testing Program	free	Aug. 1, '75
Occupational data file (745 occupations)	National Career Information Center (APGA)	$19. each	Nov. 30, '75
military data file	Department of Defense Vocational Information for Education and Work (VIEW Project)	free	July, 1975
financial aid	College Entrance Examination Board; the American College Testing Program	free	Sept. 1975
technical and specialized schools	National Center for Educational Statistics	$85.	Nov. 1975

Progress made in the procurement of data files during the 1974-1975 funding period should assure the successful field trial of the DISCOVER system beginning in January of 1976.

**12. Two problems discussed in section IX of this report (Loss of IBM technical support and the shortening of the project time line from 18 to 12 months) led to the postponement of the field test of the system until January of 1976. The receipt of continued funding from U.S.O.E. for the period from September 1, 1975, to June 30, 1976, will assure that the field test will be carried out.

**13. Although technical support in the form of personnel was not provided, the IBM Corporation did provide the following critical items:

all needed central processing unit time via its Development Center in White Plains, New York

two typewriter terminals in Illinois

one cathode ray-tube terminal in Illinois and one in Maryland

Because of this indirect support, the DISCOVER staff has maintained close communication with the appointed IBM representatives.

**14. A plan for the dissemination and maintenance of Project DISCOVER was

developed and is included in this report as Appendix 9. Briefly, the dissemination strategy calls for the formation of a not-for-profit corporation to perform the following functions:

A. to distribute the DISCOVER products
B. to maintain the DISCOVER products, including script, computer programs, and data files
C. to provide guidance and technical assistance to users and potential users of the system through phone conversation, correspondence, and/or on-site visitation
D. to provide training workshops with both guidance and technical content for users and potential users at the Corporation's home base site, in various regions of the nation, and at user sites by invitation
E. to continuously promote the product through professional writing, professional meetings, direct mailings, and other avenues
F. to engage in new development in the fields of computer-assisted guidance and computer-assisted instruction This may include development of totally new products under its own name or development of tailor-made products for others under sub-contract.
G. to form and maintain an active Consortium of DISCOVER users and to promote communication among them via annual meetings, quarterly newsletter, and informal channels
H. to pay the royalties on behalf of system users for the on-line use of copyrighted instruments.

It is proposed that the Corporation have a Board of Directors made up of some members of the present DISCOVER Advisory Boards (one for guidance and one for administrative-support functions). The functions of this Board of Directors are to set policy for the Corporation and to monitor its activities.

IX. Problems

A number of problems were encountered which have significantly affected project development. These problems, their solutions, and the ramifications for project development are listed below:

1. The project time line was cut (by U.S.O.E.) from eighteen to twelve months with a corresponding budget cut from $250,744. to $185,146. Although a revised scope of work was not requested, some revision was obviously required. Despite these cuts, every effort was made

to complete the work outlined in the proposal (sub-section C, pages 22-26). The only objective not achieved was item 12, page 24. (The carrying out of a highly controlled field test). The field trial of the DISCOVER system will be conducted from January through June of 1976 under continuation funds since received.

2. IBM withdrew projected technical personnel support. This necessitated rather drastic personnel and budget revisions (see budget revisions, Appendix 10). A Project Co-Director for Technical Development and two systems analysts-programmers were hired to perform the technical work which would have been done by IBM personnel had IBM not withdrawn its personnel support.

3. The project location was moved from Northern Illinois University (DeKalb, Illinois) to the campus of Western Maryland College (Westminster, Maryland). This move was made subsequent to the marriage of the Project Director (formerly of DeKalb, Illinois) to the Director of the Graduate Program at Western Maryland College. This move necessitated budget and personnel changes as reflected in Appendix 11.

X. Publicity Activities

No major publicity activities were carried out during the course of the 1974-1975 funding period. Three minor publicity activities were carried out, however, and these activities are listed below:

a. a Project presentation was made at the APGA National Convention in New York.

b. A Project Abstract was prepared and copies were sent to interested people upon request. (A copy of the Project Abstract is included in Appendix 12.)

c. A Newsletter was mailed to everyone on the project mailing list in late August 1975. (A copy of the Newsletter is included in Appendix 12.)

TECHNICAL DEVELOPMENT

7. ACCOMPLISHMENTS:

In the area of technical development, the following accomplishments have been completed during the period July 1, 1974 - August 31, 1975.

A. System Programming Support -- Nine general support programs have been written for the DISCOVER Guidance and Administrative Support System. Four are on-line programs and five are batch support programs. (System diagrams are contained in Appendix A.)

1. DISCOVER -- The main on-line program which controls all major DISCOVER functions. It is the interface for all terminal input and output.
2. DISCMLPR -- The on-line driving program which controls the processing of the guidance scripts.
3. DISCFRBD -- The on-line frame building program which provides support for maintaining the DISCOVER Guidance Scripts, managing DISCOVER related data bases and writing and editing new scripts.
4. DISCSRCT -- The on-line service control program which provides system services, such as file access, program control to the other on-line programs.
5. DISCSRCB -- The batch service control program which provides file access to other DISCOVER batch programs.
6. DISCCPY1 -- This batch support program provides the capacity to backup all DISCOVER related data bases.
7. DISCCPY2 -- This batch support program provides the capacity to create or restore all DISCOVER related data bases.
8. DISCDBUD -- This program provides the capacity to update fields on DISCOVER related data bases from records from a tape input file.
9. DISCTAG1 -- This program uses fields from a DISCOVER related data base to create tag records for use in the DISCOVER On-line Search Strategy.

B. Specific Programming Support for Guidance Scripts -- In addition to the system level support programs, programming support has been completed for three guidance scripts, has been mostly completed for four other scripts and has been partially completed for three scripts.

Completed Scripts

D1 Learning to Make Decisions
O2 Browsing Occupations
O1 Learning to Group Occupations

Mostly Completed Scripts (90% complete)
E1 Entry Module
O3 Making a List of Occupations
D6 College Search
D5 Four-Year Colleges

Partially Completed Scripts (50% complete)
S2 Reviewing my Interests and Strengths
S4 Narrowing my List of Occupations
O4 Getting Information about Occupations

C. Data Entry -- Data entry has been in two areas.

1. Data entry of scripts -- Data entry of guidance scripts has been completed on 11 scripts. They are:
   - D1 Learning to Make Decisions
   - O2 Browsing Occupations
   - O1 Learning to Group Occupations
   - E1 Entry Module
   - O3 Making a List of Occupations
   - D6 College Search
   - D5 Four Year Colleges
   - S2 Reviewing my Interests and Strengths
   - S4 Narrowing my List of Occupations
   - O4 Getting Information about Occupations
   - DB Trade Schools

2. Data entry of DISCOVER related data bases.
   Occupational Data Base -- Occupations have been entered. Partial entry has been completed on 90 occupations.

   College Data Base -- The data for this data base has been received on tape and the program to enter it into the system has been designed and written.

D. Data base design -- Data base design has been completed on the following DISCOVER related data bases. Description of these data bases is included in Appendix B.

1. DISCFRM -- DISCOVER Frame file or scripts including all logic tables associated with the scripts.
2. Occupational Data Base --
3. College Data Base --
4. Student Data Base (DISCOVER related)

E. Documentation -- The following technical documentation has been completed:

1. Installation Manual -- A guide to the implementation of the DISCOVER system.
2. Installation Guide -- A workbook to help the user understand the installation process.
3. Installation Audio-Tape -- A guided walk-through of the installation process.
4. Design Documentation -- General System Design *
5. Detailed Design Manual -- Detailed System Design *
6. Program Logic Manual -- *

* These manuals are complete for the on-line programs.

F. Administrative Applications -- While the major emphasis of technical development during this funding period was given to the support of guidance scripts, some progress was made toward the development of DISCOVER administrative applications.

1. Advisory Board appointed -- A thirteen member advisory board was selected for DISCOVER administrative applications. (Names given in Appendix C). This Advisory Board held two meetings, one in May and the other in June.
2. General design criteria were established. (This is listed in Appendix C.)
3. Identification and prioritizing of major administrative functions were accomplished. (Also given in Appendix C.)
4. General on-line support was developed in DISCOVER's on-line programs. Access of data bases is inherent in DISCOVER's on-line system.

G. Creating DISCOVER Distribution Tape -- The first version of the DISCOVER Distribution Tape has been created. While this version is not intended for general distribution, it does serve these purposes:

1. Provide IBM with a demonstration tape of the DISCOVER system.
2. Allow the testing of the design of the tape and the installation process.

The first version of the DISCOVER Distribution Tape consists of:

All Completed DISCOVER Programs
All DISCOVER Data Bases including:
10 Guidance Scripts
90 Occupational Descriptions
College Data Base
DISCOVER Tag Data Base
10 Sample Student Records

8. MAJOR ACTIVITIES AND EVENTS:

The major activities and events of technical development were:

A. Locating and hiring of staff -- At the beginning of the funding period, the only technical personnel were the Co-Director of Technical Development and the junior programmer/analyst.

B. Acquiring office space for staff -- This space was obtained through an agreement with the College of Dupage, Glen Ellyn, Illinois. Four offices were allocated to the DISCOVER technical staff.

C. Obtaining computer support from IBM. The IBM Corporation supplied the computer support for development through the facilities of the IBM Developmental Network. Two 1050 terminals and one 3270 terminal were provided at College of Dupage and one 3270 terminal at Western Maryland College.

D. Appointment of the DISCOVER administrative advisory board as reported in the previous section.

E. Other major activities and events are reflected in the section on accomplishments.

9. PROBLEMS:

The major departure from the original project plan was in a change in development schedule which prevented the completion of programming support for seven of the scheduled guidance scripts. This change represents a directional change rather than lack of accomplishments. Many system level functions not in the original plan were developed which will enhance the total development of the project. This change in development schedule was made for two reasons:

1. In solving a number of programming support problems, it became apparent that a general programming support capability should be developed rather than a specific capability to solve the immediate problem. While this approach usually took longer, it will be beneficial in future development as many general support functions now exist. This will greatly reduce the amount of programming support needed for the remaining guidance scripts and even the administrative applications. A list of these general programming support functions is given in Appendix D.

2. The encountering of various problems caused a re-scheduling during the early and late weeks of the project. These problems are detailed below.

   a. Staff training -- The extent of training required by the technical staff is detailed in section 15. The technical development was undertaken with a staff that was untrained in many of the programming requirements needed. While training opportunities were provided by IBM and while the technical staff developed skills rapidly the time required to become efficient in programming techniques had an affect upon development.

   b. Installation of computer terminals -- There was an extended delay in the availability of computer support. The original plan called for two 1050 terminals and one 3270 terminal to be available for use by October 15, 1975. The actual installation is given below:

      1) First 1050 terminal arrived Nov. 1, 1974
      2) First 1050 terminal installed Nov. 6, 1974
      3) Second 1050 terminal arrived Nov. 8, 1974
      4) Second 1050 terminal installed Nov. 12, 1974
      5) 3270 terminal arrived (wrong model) Nov. 13, 1974
      6) Staff training on Development Network Nov. 7, 1974
      7) Began use of Development Network Nov. 11, 1974
      8) Began use of 3270 terminal Dec. 31, 1974

c. System generation -- An unanticipated task encountered was the need to generate a CICS system to operate on the development network. This required training the lead programmer/analyst as a CICS systems programmer and required approximately 4 weeks of his time to generate and maintain CICS.

d. Developmental Network down time -- While the level of computer support on the developmental network was excellent from an overall viewpoint, down time during the months of July and August caused the loss of approximately 20% of scheduled time. During late August additional time was scheduled at night. This caused a re-scheduling of staff work hours.

e. Creation of Distribution Tape -- Writing of Manuals. The writing of the installation manuals and creating of the distribution tape had been planned for the second period of development. But due to the fact that the contract with IBM called for producing a demonstration tape, the decision was made to create this tape through the distribution process. This cased some delay in programming support for guidance scripts but has a major task of the project now completed.

f. Task development miscalculation -- At the beginning of the project, it was difficult to accurately estimate the time required for many tasks since the nature of the tasks were new and no developmental data existed for making the estimates. Some tasks required much more time than originally scheduled.

10. PUBLICITY ACTIVITIES:

N/A

11. DISSEMINATION ACTIVITIES:

N/A

12. PROGRESS ON DATA COLLECTION AND EVALUATION PLANS AND PROCEDURES:

N/A

13. OTHER ACTIVITIES:

N/A

14. STAFF EMPLOYMENT AND UTILIZATION:

N/A

15. STAFF DEVELOPMENT:

All members of the technical staff underwent a training program. The following is a listing of the personnel and the training each received.

1. Co-Director Technical Development
   a. Project Management - 1 week
   b. CICS Application Programming - 1 week
   c. DOS Supervisor I/O Macros - 1 week
   d. Data Language 1 - 1 day
   e. IBM Development Network - 2 days
   f. HIPO Documentation Techniques - 2 days

2. Lead Programmer/Analyst
   a. Project Familiarization
      1) DISCOVER Guidance Design - 3 weeks
      2) Programming techniques - 2 weeks
   b. CICS Application Programming - 1 week
   c. DOS Supervisor I/O Macros - 1 week
   d. Data Language 1 - 1 day
   e. IBM Development Network - 2 days
   f. HIPO Documentation Techniques - 2 days

3. Junior Programmer/Analyst
   a. Project familiarization - 5 weeks
   b. CICS Application Programming - 1 week
   c. DOS Supervisor I/O Macros - 1 week
   d. Data Language 1 - 1 day
   e. IBM Development Network - 2 days
   f. HIPO Documentation Techniques - 2 days

4. Data entry operators/secretaries
   a. Project familiarization - 3 weeks
   b. Using 3270 terminal - 1 day
   c. Using DISCOVER Frame Builder - 1 week

APPENDIX 1

MONTHLY PROGRESS REPORTS

Project DISCOVER

Guidance Report

Progress Report

November 30, 1974

(September 1, 1974 to November 30, 1974)

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

The Project DISCOVER Guidance Progress Report is divided into five sections by project function. The functional areas and the person responsible for each are as follows:

Module Review, Revision & Development (Jack Rayman) 1

Counselor-Administrator Support Functions (JoAnn Bowlsbey) 3

Proposal Writing and Funding Activities (JoAnn Bowlsbey) 5

Data File Development Work (JoAnn Bowlsbey) 6

Advisory Board Functions, Consulting, and Liaison Activities (Jack Rayman) 7

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A timeline of guidance activities for the duration of the current funding period appears on page 8.

MODULE REVIEW, REVISION & DEVELOPMENT

Task "Module Name" (Module Code Number)	Target Date	Actual Completion Date
Team Review-"How Do I Make a Decision" (D1)	10/1/74	10/1/74
Final Typing-"How Do I Make a Decision" (D1)	10/8/74	10/8/74
Team Review-"Browsing" (Ø2)	10/10/74	10/10/74
Team Review-"Classification Systems" (Ø1)	10/11/74	10/11/74
Team Review-"College Search" (D5(2))	10/14/74	10/14/74
Deliver for Programming-"How Do I Make a Decision" (D1)	10/15/74	10/15/74
Team Review-"Four-year College" (D5(1))	10/15/74	10/15/74
Final Typing-"College Search" (D5(2))	10/16/74	10/16/74
Final Typing-"Four-year College" (D5(1))	10/18/74	11/18/74
Team Review-"Self-Exploration" (S2)	10/24/74	10/24/74
Final Typing-"Classification Systems" (Ø1)	10/25/74	11/1/74
Final Typing-"Browsing"	10/30/74	11/6/74
Final Typing-"Self-Exploration"	11/1/74	11/30/74
Deliver for Programming-"College Search" (D5(2))	11/1/74	11/13/74
Deliver for Programming-"Four-year College" (D5(1))	11/1/74	12/13/74
Deliver for Programming-"Classification Systems" (Ø1)	11/1/74	11/6/74
Deliver for Programming-"Browsing" (Ø2)	11/1/74	11/13/74
Deliver for Programming-"Self-Exploration"	11/1/74	12/13/74
Team Review-"Trying on a Job" (Ø4)	11/4/74	11/8/74
Final Typing-"Trying on a Job" (Ø4)	11/8/74	
Team Review-"List of Occupations" (Ø3)	11/12/74	11/12/74
Deliver for Programming-"Trying on a Job" (Ø4)	11/15/74	
Final Typing-"List of Occupations" (Ø3)	11/8/74	
Team Review-"Entry" (E1)	11/28/74	
Deliver for Programming-"List of Occupations" (Ø3)	11/29/74	
Final Typing-"Entry" (E1)	12/5/74	
Deliver for Programming-"Entry" (E1)	12/13/74	
Team Review-"Personal Decision Making" (D4)	12/16/74	
Final Typing-"Personal Decision Making" (D4)	12/23/74	
Deliver for Programming-"Personal Decision Making" (D4)	12/30/74	

MODULE DEVELOPMENT RESPONSIBILITY AND SCHEDULE

Code #	Title	Person in Charge	Target Completion Date
D1	How Do I Make a Decision?	Jack	10/15/74
S2	Self-Exploration	Doris	11/1/74
D5(1)	Four-Year Colleges	Jack	11/1/74
Ø1	Classification Systems	Doris	11/1/74
Ø2	Browsing	JoAnn	11/1/74
D5(2)	College Search	JoAnn	11/1/74
Ø4	Trying on a Job	Doris	11/15/74
Ø3	List of Occupations	Doris	11/30/74
E1	Entry	Jack	12/15/74
D4	Personal Decision Making	JoAnn	1/1/75
D3	Practicing Decision Making	unassigned	4/1/75
. . . . .	. . . . .	. . . . .	. . . . .
S1	Value Clarification	unassigned	open
D2	Career Decision Game	Dr. Bosdell	late summer

DEVELOPMENT and IMPLEMENTATION of COUNSELOR-ADMINISTRATOR SUPPORT FUNCTIONS

The priorities for the present funding period call for the completion of all guidance modules and the programming of most of them; completion of detailed design of all counselor-administrative support functions; development of all data files; and preparation for the 1975-1976 field test activity. The overall schedule for the counselor-administrator support functions is, therefore, as follows:

1.	*Completion of detailed design--under the supervision of JoAnn at the Maryland site--of all elements of the counselor-administrator support system.*	*January 2, 1975-August 30, 1975*
2.	*Programming of the counselor-administrator support systems--under the supervision of Jim Boyd at the Illinois site--of all elements of the counselor-administrator support systems.*	*September 1, 1975-April 30, 1976*
3.	*Field test of the counselor-administrator support systems, phased into the ongoing field test of the total system.*	*May--June, 1976*
4.	*Revisions of counselor-administrator support systems as needed, based on field trial activity.*	*July--August, 1976*
5.	*Beginning dissemination of total system.*	*September, 1976-February, 1977*

The remainder of this document will address itself to the plan for accomplishing the first task above, i.e., to specifying the detailed design of the counselor-administrator support functions from January--August, 1975. The activities related to accomplishment of this task are as follows:

1.	*Thorough study by Jim, JoAnn, and IBM-designated person (if appropriate) of the present source document (pp. 220-245 of final DISCOVER report from 1972-1973)*	*January, 1975*
2.	*Joint meeting of these parties to discuss a) feasibility of implementation of these functions as originally designed, b) interface of existing IBM products, and c) alternatives for proceeding.*	*January, 1975*
3.	*Preparation of detailed design, including format, script, and programming instructions for all parts of the counselor and administrator support systems. This work will include:*	*February--June, 1975*

a. design of student record
b. scripting of the student interaction submodule
c. definition of the counselor-support functions:
   --ability to recall the student record file in a variety of formats.
   --ability to manipulate the student record by sorting on individual data elements or combinations of elements.
   --recall of all system data files such as occupational file, four-year college file, technical/specialized school file, master schedule course file.
   --ability to monitor the progress of counselees in their use of the guidance system.
   --ability to update all appropriate files.
d. preparation of the student "Request-A-Course" module
e. Precise definition of all of the administrator-support functions, including:
   --attendance-keeping system
   --review of teacher schedules
   --bus routing
   --vocational handicapped reports
   --follow-up study
   --generation of such items as school and class lists, address labels, and identification cards
   --review of student records to identify students with graduation deficiencies
   --generation of transcripts
   --grade reporting and analysis
   --on-line scheduling
   --on-line schedule changing
   --student record maintenance functions
   --on-line use of statistical calculations against elements in the student record
   --personnel records
   --library circulation

4. Discussion of these detailed plans with an advisory group consisting of Jim Boyd, Howard Schumacher, designated IBM representative(s), James Augustine (President of AEDS), and two other representatives from CVIS sites making use of the administrative functions. — July, 1975

5. Revision of detailed plans as needed as a result of step 4. — August, 1975

6. Delivery to Jim Boyd for programming. — August 30, 1975

PROPOSAL WRITING AND FUNDING ACTIVITIES

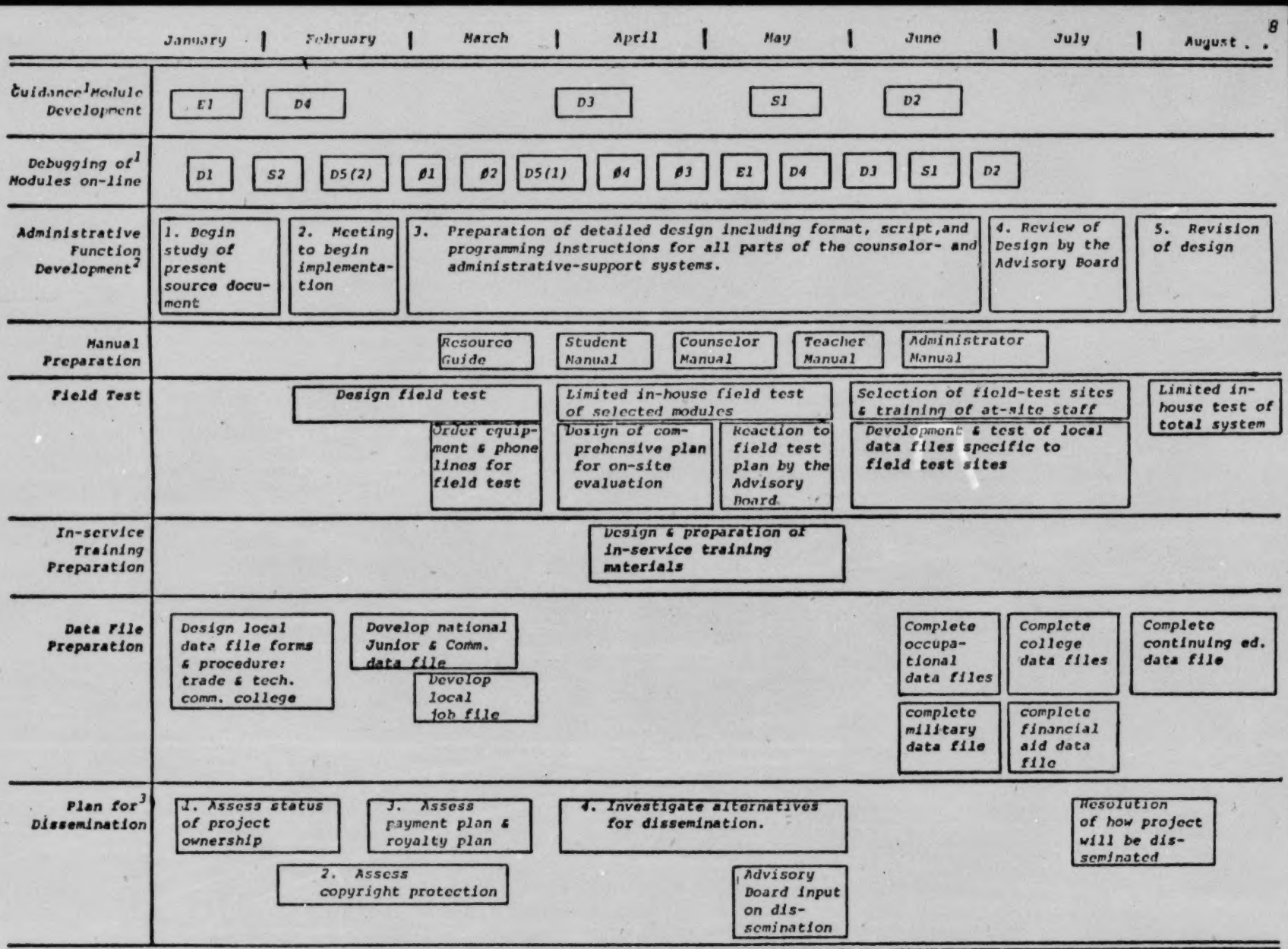
Task	Target Date	Completion Date
Generate list of all possible funding sources	10/4/74	10/4/74
Collect comprehensive information from probable funding sources	10/11/74	10/12/74
Prepare first draft of proposal and budget	10/18/74	11/12/74
Circulate proposal draft for discussion with all concerned parties: Boyd, Schaeffer, Vogel, etc.	10/25/74	11/12/74
Revise proposal and budget and put them in final form	11/1/74	11/25/74
Submit proposal to U.S.O.E.	11/29/74	11/27/74
Submit proposal to alternate funding sources	12/15/74	
PRAY	12/25/74	5/1/75

DATA FILE DEVELOPMENT WORK

Task	Target Date	Completion Date
Develop both tabular and narrative lists of all of the elements of all the data files needed for the operation of DISCOVER	10/4/74	10/4/74
Prepare occupational data file document and begin negotiations with:	10/18/74	
a) Houghton-Mifflin		10/18/74
b) J. G. Ferguson		11/15/74
c) Science Research Associates		11/15/74
d) Chronicle Guidance		
e) United States Department of Labor		12/13/74
Prepare college data file document and financial aids data file document and begin negotiations with A. C. T. and C. E. E. B.	10/25/74	12/3/74
Begin negotiations with various appropriate sources as a first step in the development of the following scripts and data files:		
1) trade and technical schools; National Association of Trade and Technical Schools; Department of Commerce; Ken Hoyt and S. O. S project.	12/10/74	
2) Apprenticeship: United States Department of Labor, Bureau of Apprenticeship.	12/10/74	
3) Military: Department of Defense	12/10/74	
4) Local jobs: United States Employment Service	12/10/74	
Precisely define student record, checking data elements against all modules.	11/11/74	

ADVISORY BOARD FUNCTIONS, CONSULTING, AND LIAISON ACTIVITIES

Activity	Location	Persons Involved	Date
Liaison with Jim Boyd	College of DuPage	JoAnn, Jack, Jim	9/18/74
I.B.M. contract negotiation	Northern Illinois University	JoAnn, Jim, Jack, I.B.M. officials	9/18/74
Consultant services A.C.T.	O'Hare Field, Chicago	JoAnn, Jack Dr. Prediger	9/19/74
Liaison with Jim Boyd	Western Maryland College	JoAnn, Jim, Jack	9/26/74
Negotiations with Houghton-Mifflin	Boston, Massachusetts	JoAnn, H-M officials	10/7/74
Field observation of CVIS	Charles County Community College	Jack, Doris, Carol	10/16/74
Negotiations with C.E.E.B.	New York City, N.Y.	JoAnn, C.E.E.B. officials	10/18/74
National Advisory Board meeting--Fall	Baltimore-Washington International Airport	JoAnn, Jim, Jack Doris, Carol Advisory Board members	10/25/74
National Conference on Vocational Education Research, U.S.O.E.	Arlington, Virginia	JoAnn, Jack	11/4-5/74
Project Monitor-Site Visit	Western Maryland College	JoAnn, Jack Mr. Pritchard	11/8/74
Consultant Services-- Awareness & Decision Making	Western Maryland College	JoAnn, Jack, Doris, Dr. Tiedeman	11/22/74
Consultant Services-- Awareness & Decision Making	Baltimore-Washington International Airport	JoAnn, Jack, Doris, Dr. Super, Dr. Miller	12/9/74
National Advisory Board meeting--Spring	Western Maryland College	JoAnn, Jim, Jack, Doris, Carol, Advisory Board members	5/9/75



1. Module code #'s correspond to those on page 2 of this report.
2. Numbers refer to activities in the accomplishment of task 1, pages 3 and 4, of "Plans for Further Development and Implementation of Counselor-Administrator Support Functions"
3. Numbers refer to tasks as delineated on page 19 of the 1975-1977 funding proposal.

Project DISCOVER

Guidance Progress Report

December 31, 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

This December Progress Report highlights the major Guidance developments of the Project DISCOVER team for the month of December 1974.

Once again, the report is broken down into the five functional areas.

1. *Module Review, Revision, and Development*

   -revision of the "College Search Module" in accordance with available data elements (D5(2))

   -writing of the "Personal Decision Making" module (D4)

   -writing of the "List of Occupations" module (03)

   -final typing, editing, and delivery for programming of the "Four-year College" module (D5(1))

   -final typing, editing, and delivery for programming of the "Self-Exploration" module (S1)

   -initiation of work on the "Practicing Decision Making" module (D3)

   -initiation of work on the "Entry" module (E1)

   -Review of "Trying on a Job" (04)

   -Review of "Personal Carecr Decision Making" module (D4)

   -Review of "List of Occupations" module (03)

   -Development of ethnic, sex, and S.E.S. bias materials for use in the "Trying on a Job" module, including the field test of these materials in a local middle school.

2. *Counselor-Administrator Support Functions*

   -major thrust scheduled in this area for January, 1975

3. *Proposal Writing and Funding Activities*

-preparation of the National Science Foundation proposal

-preparation of proposal abstract and cover letter for submission to 26 foundations

-preparation of proposal abstract for submission to the Fund for Improvement of Higher Education.

-investigation of other sources of funding:
Dr. Kenneth Hoyt's Career Education Division, U. S. O. E.
U. S. Department of Labor
other divisions of U. S. O. E.
N. I. E.
The Department of Justice

4. *Data File Development*

-securing of college data file agreement with ACT

-precisely defining college data file elements

-further investigation directed toward securing an occupational data file

5. *Advisory Board Functions, Consulting, and Liaison Activities*

-one full day consulting session with Dr. Donald Super, Columbia University, and Dr. Gordon Miller, College Entrance Examination Board, directed toward the further development of the "Practicing Decision Making" module (D3) (Jack, JoAnn and Doris)

-One half day session at the IBM Washington, D. C. Demonstration Center gaining exposure to computer-based administrative functions as developed by Howard Schumacher, Director of Management Information Services at Proviso Township High Schools, Maywood, Illinois.

Project DISCOVER

Guidance Progress Report

January 31, 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

This Progress Report highlights the major Guidance developments of Project DISCOVER for the month of January, 1975.

1. *Module Review, Revision, and Development:*

   -Final typing, editing, and delivery of the module entitled, "Narrowing my List of Occupations" (D4)

   -Final typing, editing, and delivery of the module entitled, "Making a List of Occupations to Explore" (03)

   -Completion of script writing for the module entitled, "Getting Information about Occupations" (5). Final typing and editing not yet complete.

   -Completion of approximately two-thirds of the script for the module entitled, "Entry" (E1)

   -Completion of approximately two-thirds of the script for the module entitled, "Practicing Decision Making" (2B)

   -Renaming of most of the modules to better communicate the contents to the user (see attached "Module Development Responsibility and Schedule").

   -Completion of approximately three-quarters of the script for the module entitled, "Community and Junior Colleges" (DA)

   -Initiation of work on the module entitled, "Trade and Technical Schools" (DB)

   -Initiation of work on the module entitled, "Apprenticeships" (DC)

2. *Counselor-Administrator Support Functions:*

   -Major decision made to re-conceptualize the DISCOVER Counselor-Administrator Support functions. Jim Boyd will accept major responsibility for this portion of the DISCOVER package with full support from the Maryland team.

3. *Proposal Writing and Funding Activities (Summary of Current Status):*

   -Full proposals submitted: USOE, Part C, Vocational Education Research
   National Science Foundation

-Status: too soon to know, although USOE has requested data in support of the nationwide significance of the project. (Presumably they are interested.)

-Abstracts submitted: Fund for Improvement of PostSecondary Education
Twenty-six (26) selected foundations

-Status: will receive decision from the Fund for Improvement of PostSecondary Education by February 15. This will be an invitation to submit a full proposal or not.

Fifteen (15) responses have been received from the selected foundations. (13 negative and 2 optimistic)

Optimistic: U. S. Steel--invitation to apply for $5,000.
Exxon--invitation to submit application (usual funding level, $100,000.)

Negative: 2 No funds due to economic condition
9 Not in priority area or scope
2 Already made their contribution to computer-based guidance (Mott and Carnegie)

4. Data File Development:

-Securing of final arrangements for subcontract of occupational data file with the National Career Information Center.

-Preliminary contacts regarding data files and script writing assistance from:

Department of Defense
National Association of Trade and Technical Schools
American Association of Community and Junior Colleges
American Council on Education
National Association for Public Continuing and Adult Education
National Advisory Council of Adult Education
USDL--Office of National Industry Promotion (apprenticeships)

5. Advisory Board Functions, Consulting, and Liaison Activities:

-One full day of Guidance Team-Technical Team coordination at Western Maryland College (JoAnn, Jim, Jack, Doris)

-One full day coordinating meeting with IBM (Bethesda)
DISCOVER team: JoAnn, Jim, Jack, Doris
IBM team: Frank Benham, Bob Cropp, Bill Fairbairn, Walt O'Neill, John Sanders, Charlie Wilkes

6. *Miscellaneous Developments:*

-*Preliminary investigation of our status in regard to public domain, copyright protection, alternatives for dissemination, etc., with Morton Bachrach of National Institute of Education.*

-*Ordering of equipment for January, 1976, field test.*

-*Further pursuit of agreements with Educational Testing Service (ETS) regarding the use of Katz's names of values and definitions. (For use in our module entitled, "Understanding My Values".)*

-*Prelimiary investigation of potential field-test sites.*

MODULE DEVELOPMENT RESPONSIBILITY AND SCHEDULE

(revised 1/22/75)

Code #	Title	Person in Charge	Target Completion Date
D1	Learning to Make Decisions (1B)	Jack	10/15/74
S2	Reviewing My Interests & Strengths (3)	Doris	11/1/74
D5	Four-Year Colleges (7)	Jack	11/1/74
O1	Learning How To Group Occupations (1C)	Doris	11/1/74
O2	Browsing Occupations (2C)	JoAnn	11/1/74
D6	College Search (7)	JoAnn	11/1/74
O4	Getting Information About Occupations (5)	Doris	11/15/74
O3	Making a List of Occupations to Explore (4)	Doris	11/30/74
E1	Entry	Jack	1/30/75
D4	Narrowing My List of Occupations (6)	JoAnn	1/30/75
D3	Practicing Decision Making (2B)	JoAnn	4/1/75
S1	Understanding My Values (1A)		open
D7	Making a Specific Career Plan (7)	Jack	3/15/75
D8	Graduate and Professional Schools (7)	Doris	late summer
D9	Financial Aid (7)	Doris	4/15/75
DA	Community and Junior Colleges (7)	Doris	2/1/75
DB	Trade Schools (7)	JoAnn	2/15/75
DC	Apprenticeships (7)	Jack	2/15/75
DD	Military (7)	JoAnn	5/15/75
DE	Local Jobs (7)	Jack	3/1/75
DF	Continuing Education (7)	Doris	4/15/75
D2	Playing A Values Game	Betty Bosdell	late summer

Project DISCOVER

Guidance Progress Report

February 28, 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

Major Guidance developments for the month of February, 1975:

1. *Module Review, Revision, and Development:*

   -Considerable revision and editing to the module entitled, "Getting Information about Occupations" (O4). Final typing and delivery expected during the first week of March.

   -Development of an on-line instrument to provide users with guidance in the use of the system. This instrument may also be utilized as a measure of Career Development.

   -Completion of script writing for the module entitled, "Entry" (E1). Final typing now underway.

   -Completion of the script for the module entitled, "Practicing Career Decisions" (D3). Final typing and editing not yet complete. (This module was formerly called, "Practicing Decision Making.")

   -Completion of script writing for the module entitled, "Community and Junior Colleges" (DA). Final editing and typing not yet complete.

   -Completion of approximately three-quarters of the script for the module entitled, "Trade and Technical Schools." (DB)

   -Continuation of negotiations with the Department of Labor for materials relevant to the development of the "Apprenticeships" module (DC).

   -Initiation of work on the module entitled, "Understanding My Values" (S1).

2. *Counselor-Administrator Support Functions:*

   -Design of the Counselor-Administrator support function initiated by Jim Boyd.

   -Complete review of this portion of the system held on February 28, 1975.

3. *Proposal Writing and Funding Activities:*

   -Proposal submitted to the Exxon Foundation, Educational Research and Development Program.

   -Status of other proposals submitted generally the same as reported in the January Progress Report.

4. *Data File Development:*

-Final specification of occupational data file.

-Formalization of subcontract with National Career Information Center, Washington, D. C., to provide necessary occupational data file.

-Hiring of writer who will prepare occupational data file (in accordance with DISCOVER specifications) by NCIC.

-Specification of data elements for the student record.

-Continued search for technical and specialized schools data file.

5. *Advisory Board Functions, Consulting, and Liaison Activities:*

-One full-day consulting session at National Career Information Center to negotiate the occupational data file subcontract. (JoAnn, Doris, Frank Burtnett)

-One full-day liaison session at College of DuPage, February 27. (JoAnn and Jim)

-Organization of and participation in a meeting of persons from the State of Illinois Department of Vocational and Technical Education, the IBM Corporation, the Executive Director of the CVIS Consortium, and DISCOVER to discuss future plans for dissemination, maintenance, and joint cooperation. (JoAnn, Jim, Ron McCage, Rebecca Willis, and IBM officials)

-Liaison session regarding "Playing a Values Game" module (D2)

6. *Miscellaneous Developments:*

-Receipt, compliments of IBM, of a large, (though still unconnected) "valentine."

-Preliminary discussion with Dr. Donald Super and representatives of Psychological Corporation regarding the possible preparation of a paper version of DISCOVER.

-Drafting of a preliminary and secondary plan for the possible preparation of a paper version of DISCOVER.

-Preparation of a position paper entitled, "Preliminary Thoughts about Dissemination and Maintenance of DISCOVER."

-Initiation of work on the preparation of DISCOVER support manuals, field trial site selection, and overall evaluation design.

-Receipt of written permission to use Martin Katz's ten values and their definitions in module entitled, "Understanding My Values" (S1).

Project DISCOVER

Guidance Progress Report

March 31 , 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

Major Guidance developments for the month of March, 1975:

1. Module Review, Revision, and Development:

-Final typing, editing, and delivery of module entitled "Entry" (E1) for programming.

-Continued editing and modification of the module entitled "Practicing Career Decisions" (D3)

-Preparation of additional functions to be inserted in the previously delivered module entitled "College Search" (D6)

-Second round editing of the module entitled "Community and Junior Colleges" (DA). Major revisions made.

-Continuation of work on the script for the module entitled "Trade and Technical Schools" (DB)

-Reorganization and further modification of the script for the module entitled "Getting Information about Occupations" (O4). This involves considerable alteration of the script for the module entitled "Making a List of Occupations to Explore" (O3)

-Receipt of a large packet of materials relevant to the development of the "Apprenticeships" module (DC). Continued work on this module.

-Initial attempts at on-line debugging begun (March 26-28).

-Continued research and development of the module entitled "Understanding My Values" (S1).

-Initiation of work on the module entitled "Making a Specific Career Plan" (D7)

-Initiation of work on the module entitled "Financial Aid" (D9)

2. Counselor-Administrator Support Functions:

-Meeting in Chicago (March 21) with regard to DISCOVER administrative functions (Bowlsbey, Boyd, Benham, O'Neill, Willis)

a. Tentative Administrative Functions Advisory Board selected.
b. Setting first meeting of full board May 7.
c. Boyd to develop written plan of administrative functions by May 7.

3. Proposal Writing and Funding Activities:

-Preparation of a proposal for bringing CVIS distribution function to Western Maryland College.

-Abstract submitted to the Fund for Improvement of PostSecondary Education was rejected.

-Private funding sources track record looks like this:
26 proposals submitted
23 rejections
1 promise of $5000 from United States Steel
1 still under review (Exxon Corporation)
1 no response (Twentieth Century Fund)

-United States Office of Education: All decisions have been made though they will not be made public until mid-April. Where are those "leaks" now, just when we really need them?!

-No word yet on the status of the proposal submitted to the National Science Foundation.

4. Data File Development

-Half-day coordination meeting with APGA personnel (Burtnett and McCurdie) regarding the DISCOVER occupational file (March 6, 1975). Meeting held at Western Maryland College with entire Guidance staff.

-Receipt and review of first occupational briefs prepared under contract with the National Career Information Center (NCIC)

-Continued communication regarding data files and script-writing assistance from:
Department of Defense
American Council on Education
National Association for Public Continuing and Adult Education
National Advisory Council of Adult Education

5. Advisory Board Functions, Consulting, and Liaison Activities:

-Participation in training sessions for potential CVIS users in San Francisco (March 3-5). Bowlsbey

-Preparation and delivery of a paper at the National Career Education Forum, Columbus, Ohio, March 20. Bowlsbey

-Coordination with David Winefordner (Appalachia Educational Laboratory, Charleston, West Virginia) on computerization of his Career Decision Making Program, March 11-12. Bowlsbey

-Meeting in Chicago with regard to:

a. DISCOVER administrative functions

b. Future of CVIS Project (Bowlsbey, Boyd, Benham, O'Neill, and Willis)

-Attendance at the American Personnel and Guidance Association National Convention in New York City; participation in Institute '75 and first presentations about DISCOVER (Bowlsbey and Rayman)

-Coordination with Boyd and IBM regarding the installation of the terminal at Western Maryland College.

6. Miscellaneous Developments: milestones

-Terminal at Western Maryland College operational March 24, 1975.

Project DISCOVER

Guidance Progress Report

April 30, 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

Major Guidance developments for the month of April, 1975:

1. *Module Review, Revision, and Development:*

-Continued editing and modification of the module entitled, "Practicing Career Decisions" (D3)

-Final editing of the module entitled, "Community and Junior Colleges" (DA)

-Completion of writing of the script for the module entitled, "Trade and Technical Schools" (DB)

-Final editing, typing, and delivery of the script for the module entitled, "Getting Information about Occupations" (04)

-Continued work on the script for the module entitled, "Apprenticeships" (DC)

-Continued research and writing of the script for the module entitled, "Understanding My Values" (S1)

-Final editing, typing, and delivery of the script for the module entitled, "Making a List of Occupations to Explore" (03)

-Initiation of on-line editing of "Browsing Occupations" (02), "Learning How to Group Occupations" (01), and "Four-Year Colleges" (8D)

-Continued work on the script for the module entitled, "Financial Aid" (8B)

-Continued work on the script for the module entitled, "Making a Specific Career Plan" (D7)

-Initiation of work on the module entitled, "Continuing Education" (8H)

-Set up meetings and made arrangements for the development of the military module as follows:

1. Meeting with Dr. Walter Cox, Project Score, April 29, 1975 (Bowlsbey, Cox)
2. Meeting with the designated contact person from the Department of Defense.

2. *Counselor-Administrator Support Functions:*

-Meeting in Bethesda (April 21) with regard to DISCOVER administrative functions (Bowlsbey, Boyd, IBM representatives)

-Remainder of report to be included in Technical Progress Report.

3. Proposal Writing and Funding Activities:

-Received word of continued funding from the United States Office of Education, Vocational Education, Part C.

-Revised scope of work and budget for the new funding period (September 1, 1975 through June 30, 1976)

-Prepared and submitted a proposal for funding from United States Office of Education, Career Education (Ken Hoyt's program)

-Private funding sources track record looks like this:
26 proposals submitted
24 rejections
1 promise of $5000. from United States Steel
1 still under review (Exxon Corporation)

-Reviewed and resolved present budget expenditures with Bosdell, Boyd, and Hughes at Northern Illinois University.

-Continued coordination with the Department of Labor in regard to the selection of ten states for occupational information grants. We'd like to see DISCOVER used here.

-Still no word on the status of the proposal submitted to the National Science Foundation.

4. Data File Development:

-Obtained national data files for the Technical and Specialized Schools module and for the Graduate School search module. These files will be provided by the National Center for Educational Statistics.

-Continued coordination with APGA in regard to development of the Occupational Data Files.

5. Advisory Board Functions, Consulting, and Liaison Activities:

-Participation in training sessions for potential CVIS users in Poughkeepsie, New York (Bowlsbey, April 22-24)

-One day of orientation to the on-line editing capabilities of the system by Tom Boyle of the technical team. (Boyle, Rayman, Bryson, Rabush, April 9, at Western Maryland College).

-Participation in a meeting for the detailed planning of the future distribution and maintenance of CVIS in Bethesda, Maryland. (Bowlsbey, Boyd, Willis)

-Continuous coordination with IBM in regard to a new contract for next year.

6. Miscellaneous Developments:

-One week of vacation (Bowlsbey, April 7-11)

-Prepared plan for DISCOVER field test.

-Made preparation for the first general mailing to inquirers about DISCOVER.

Project DISCOVER

Guidance Progress Report

May 31, 1975

JoAnn Harris-Bowlsbey

Co-Director Guidance Development

Major Guidance development for the month of May, 1975:

1. *Module Review, Revision, and Development:*

   -Continued editing and modification of the module entitled, "Practicing Career Decisions" (D3) (This module is a bear!)

   -Began final typing of the module entitled, "Community and Junior Colleges" (DA)

   -Final typing and delivery of the script for the module entitled, "Trade and Technical Schools" (DB)

   -Continued work on the following modules:
   Apprenticeships (DC)
   Understanding My Values (S1)
   Financial Aid (8B)
   Making a Specific Career Plan (D7)
   Continuing Education (8H)
   Military (8J)

   -Completed on-line editing of the following modules:
   Learning How to Group Occupations (01)
   Browsing Occupations (02)
   Learning to Make Decisions (D1)

   -Began on-line editing of the following modules:
   Four-Year Colleges (8D)
   Reviewing My Interests and Strengths (S2)
   College Search (8I)
   Narrowing My List of Occupations (D4)

   -Spent one-half day consulting with Dr. Betty Bosdell regarding the module entitled, Playing a Values Game". (Bowlsbey, Rayman, Bryson, Bosdell, May 31, 1975)

2. *Counselor-Administrator Support Functions:*

   -Hereafter this report will be included in the Technical Progress Report.

3. *Proposal Writing and Funding Activities:*

   -No word yet as to the status of our proposal submitted to the U. S. Office of Education, Career Education.

   -Private funding sources track record is the same as last month, except that EXXON has notified us that our proposal abstract received a very favorable review. They have requested that we submit a full-blown proposal.

   -Received word from the National Science Foundation that our proposal is receiving very favorable consideration. They have requested that we provide written answers to a number of specific questions and that any proposal alterations we might wish to make be made now (prior to final review).

4. Data File Development:

-Conducted a demonstration of the system for the APGA researchers who are developing the Occupational Data Files (May 22)

-Received final, final format of the college search data file from ACT.

5. Advisory Board Functions, Consulting, and Liaison Activities:

-Attended the CVIS Consortium meeting in San Francisco (Bowlsbey, Boyd, May 7-9)

-Made introductory presentations of the system to the following potential field test sites:
Baltimore City School System (Bowlsbey, Rayman, May 15)
Montgomery County School System (Bowlsbey, Rayman, May 21)
Prince Georges County School System (Bowlsbey, Rayman, May 27)

-Participated in a contract review session with IBM representatives (Bowlsbey, Rayman, May 28)

-Demonstrated the system to Dr. Leo Cohen and associates from the Institute for Research and Development in Occupational Education (affiliated with the City University of New York). They are interested in field testing the system on inner-city populations. (May 27)

-Hosted the Spring Advisory Board Meeting (May 29-30)

6. Miscellaneous Developments:

-One week vacation for Rabush (compensatory time, May 19-23)

-Received word that we have been selected to serve as the CVIS Dissemination Center for the next year (beginning July 1, 1975)

Project DISCOVER

Guidance Progress Report

June 30, 1975

JoAnn Harris-Bowlsbey

Co-Director:Guidance Development

Major Guidance development for the month of June, 1975:

1. Module Review, Revision, and Development:

-Module D3, "Practicing Career Decisions," is now in the final stage of development after multiple revisions.

-Final typing of the module entitled, "Community and Junior Colleges: (DA)

-"Apprenticeships" module (DC) rough draft completed

-"Understanding My Values" (S1) in final edit stages.

-Continued work on the following modules:

Financial Aid (8B) we are awaiting aid formula information on this module from ACT and ETS
Making a Specific Career Plan (D7)
Continuing Education (8H)
Military (8J)

-Completed on-line editing of the following modules:

Four-year Colleges (8D)
Reviewing My Interests and Strengths (S2)
College Search (8I)

-Began on-line editing of the following modules:

Entry (E1)
Getting Information about Jobs (04)

2. Counselor-Administrative Support Functions:

-See Jim Boyd's Technical Progress Report

3. Proposal Writing and Funding Activities:

-Received word that DISCOVER will NOT receive funding from the U. S. Office of Education, Career Education. The Career Education Funding Proposal was NOT a winner.

-Preparation and submission of a full-blown proposal to the EXXON Education Foundation. This proposal requests funding for the development of a college-level version of DISCOVER.

4. Data File Development:

-Received the first shipment of occupational data files from APGA. We now have 100 of these files in hand.

-Carried on continuing dialogue with Donna McCurdy to insure that the occupational data files will meet our specifications.

5. Advisory Board Functions, Consulting, and Liaison Activities:

-Finalized our contract with IBM for 1975-1976.

-Conducted the final presentation of the system to the Anne Arundel School System (Bowlsbey, Rayman, June 4, 1975)

-Attended a meeting with the CVIS Consortium people (Jones and Willis) in Poughkeepsie regarding the CVIS Distribution Center.

-Gave a presentation of the system to Niel Carey and a board of Maryland officials looking into alternative computer guidance systems (Bowlsbey and Rayman, June 18, 1975)

-Attended a meeting regarding the DISCOVER Administrative Functions committee in Bethesda (Bowlsbey, June 24, 1975)

-Prepared for the Western Maryland College take-over of the CVIS Distribution Center.

6. Miscellaneous Developments:

-One-week vacation for Bryson

-Three-week vacation for Rabush

-Two-week vacation for Rayman

Project DISCOVER

Guidance Progress Report

July 31, 1975

JoAnn Harris-Bowlsbey

Director: Guidance Development

Major Guidance Development for the month of July, 1975:

1. Module Review, Revision, and Development--A Summary Report:

-Entry Module: Script has been turned over to programmers. Script (E1) entered. Most programming completed. On-line editing still in process. Final programming support still in process. Target completion date: August 31.

-Understanding My Values: Script complete. Will be turned over for (S1) programming in August.

-Playing a Values Game: Game designed. Will be turned over for (D2) programming in August.

-Learning to Make Decisions: Script complete. Script entered. (D1) Programming support 95% complete. Final on-line editing nearly complete. Tested on a limited number of subjects at WMC.

-Practicing Career Decisions: Script now complete. Will be turned (D3) over to programmers in August.

-Learning How Occupations Can Be Grouped: Script complete. Script (O1) entered. Programming support complete. On-line editing complete. Tested on a limited number of subjects at WMC.

-Browsing Occupations: Script complete. Script entered. Programming (O2) complete. On-line editing complete. Tested on a limited number of subjects at WMC.

-Reviewing My Interest and Strengths: Script complete. Script entered. (S2) Programming support begun. Some on-line editing of text complete.

-Making a List of Occupations to Explore: Script complete. Script (O3) entered. Programming support begun.

-Getting Information about Occupations: Script complete. Script entered. (O4) Programming support begun.

-Narrowing My List of Occupations: Script complete. Script entered. (D4) Programming support begun.

-Exploring Specific Career Plans: Script begun. Script will be completed (D7) by August 31.

-Local Jobs: Script writing still in process. (DE)

-Financial Aid: Information script completed. Still awaiting word on (D9) formulae from ACT and CEEB.

-Apprenticeships: (DC) Script written.

-Four-Year College Information and Search: Script written. Script (D5) entered. Scripts edited on-line. Programming support not yet completed.

-Community and Junior Colleges: Script written. Final typing complete. (DA) Script not yet entered.

-Graduate and Professional Schools: Conceptual design completed only, (D8) although search will basically be the same as the four-year college search.

-Technical and Specialized Schools: Script written. Script turned over (DB) for programming.

-Continuing Education: Script being written. Will be finished by (DF) August 31.

-Military: Script being written. Completion date is contingent upon (DD) progress made by U.S. Department of Defense. Will definitely NOT be finished by August 31.

2. Counselor-Administrative Support Functions:

-Included in Technical Progress Report.

3. Proposal Writing and Funding Activities:

-Full day with Caryn Korshin of the Exxon Foundation in regard to possible DISCOVER funding and the inclusion of the CVIS product in the Exxon Impact Program. (Bowlsbey, 1 July) Expect an on-site visit from an Exxon Evaluation Team in late August.

-Revision of Scope of Work and Budget for the NSF proposal. Prepared written responses to three pages of questions about DISCOVER and returned them to NSF. Should hear word from NSF about funding in late August.

4. Data File Development:

-Met with Donna McCurdy and Jean King of NCIC to iron out some minor details regarding completion of the Occupational Data Files. (Rayman, Bryson, 24 July)

-Set meeting date with John Holland to assign Katz values to occupations.

5. Advisory Board Functions, Consulting, and Liaison Activities:

-Attendance at IBM Data-Language-One School in Philadelphia. (Bowlsbey, 2 July)

-Review meeting with IBM. (Bowlsbey, 8 July)

-Meeting with Bishop, Ausmus, and Pinch of the Department of Labor

about DISCOVER and Department of Labor grant programs to states. (Bowlsbey, 9 July)

-All-day demonstration and explanation of the DISCOVER system to Ms. Shirley Reid, State Department of Education, Vermont. (Bryson, Rayman, Bowlsbey, 14 July)

-All-day demonstration and explanation of the system to Jerry Parrish and Margaret Thal-Larsen of Man-Technology Career Projects (funded by the National Science Foundation) (Bowlsbey, Rayman, 15 July)

-Meetings with the representatives of three possible field-test sites (Ann Arundel, Baltimore City, and Montgomery) (Boyd, Bowlsbey, Rayman, Bryson, Genham, Shenk, 15-16 July)

-Invitation to Baltimore City to be the field-test site (18 July)

-Further negotiations with the Psychological Corporation for the development of a paper-pencil version of DISCOVER.

-Meetings with IBM salespeople and customers about CVIS--San Jose (Bowlsbey, 22-23 July)

6. Miscellaneous Developments:

-Launching of the first month of CVIS Distribution Center activities.

-Two-week vacation (Bowlsbey)

-One-week vacation (Rayman)

-One-week vacation (Bryson)

-One-week vacation (Rabush)

- PROJECT NEEDS†

A. Needs for adequate field trial of guidance content:

1. Operation throughout the entire school day.
2. Availability of students to fill the terminals during all hours of operation.
3. Availability of students for orientation session (one period).
4. Availability of students for completing questionnaires, for interviews, and for possible pre- and post-testing.
5. Availability of student data for student record backup and for student data analysis.
6. Paraprofessional support for scheduling at terminal.
7. Inservice training time with counselors--2 or 3 days.
8. Administrative-level local coordinator.
9. Availability of users in grades 7-12.
10. Space and security for two to three cathode ray tube terminals, a control unit, a data set, and one printer, including sufficient electical outlets.
11. Cataloguing of student behavior after use of system: i.e., use of library resources, visits to counselors, etc., as applicable.
12. Supportive environment from counselors.
13. Random selection of control and experimental groups.
14. Adequate communications about the field trial to Board, administration, faculty, and parents.

B. Needs for technical operation:

1. CICS/VS capability and staff support.
2. CICS partition in priority 1.
3. One 3330 disk drive or equivalent on-line storage.
4. 20K real or 96K virtual storage pool.
5. One bisynchronous port dedicated to DISCOVER
6. Student data base in DISCOVER format.

APPENDIX 2

MINUTES of the TWO ADVISORY BOARD MEETINGS

MINUTES
Project DISCOVER Advisory Board Meeting

The first meeting of the Project DISCOVER Advisory Board was held at the Baltimore-Washington International Airport Holiday Inn on Friday, October 25, 1974. The following people were in attendance:

Mr. James Augustine, Jr.
Mr. Niel Carey
Dr. T. Anne Cleary
Dr. John Holland
Ms. Peg Long
Dr. Ronald McCage
Dr. Bruce McKinlay
Dr. Dale Prediger
Mr. David Pritchard
Dr. Donald Super
Dr. Gina Wieman
Dr. JoAnn Bowlsbey
Mr. James Boyd
Dr. Jack Rayman
Ms. Doris Bryson

Dr. Bowlsbey opened the meeting with greetings and an introduction of each Board member. She presented an historical summary of DISCOVER and a review of the present status of the project. Dr. Jack Rayman continued the report about the current progress of DISCOVER by explaining the module flowchart and the schedule of module completion.

Using the prepared booklet, "Technical Development Plan", to outline technical goals and milestones, Mr. James Boyd discussed the technical aspects of DISCOVER. He explained that many of the initial tasks attendant to the construction of the overall systems design have been completed. College of DuPage has not yet received the IBM terminal; until it arrives no programs can be tested. Mr. Boyd described a new method of checking computer programs before they are introduced into the computer, a method which should greatly reduce the need for de-bugging. At this point a discussion of confidentiality ensued. Mr. Boyd stated that security will

be built into the DISCOVER system.

Several questions and concerns were expressed with regard to theoretical design. Dr. Bowlsbey explained that some of DISCOVER is straight-line in design; that is, the student must go through the modules in order. Other modules can be accessed at the user's discretion with no prerequisites. Dr. Super asked if any of the proposed materials on decision making attempted to raise awareness of the need to plan or motivate the student to learn decision-making skills. He suggested the possibility of including a "road map" of possible decisions which would typically be encountered at different life stages.

A discussion of motivation followed. System flexibility was a major concern. Many Board members felt that the system should allow a very high degree of individual choice (as to how the user progresses through it) with a minimum of prerequisite experiences. It was suggested that users be allowed to enter advanced modules for which they lack certain basic information. This approach will allow users to learn (by trial and error) that they need to go back and complete earlier instructional modules. Most Board members felt that the flexibility to "get in over your head" and then retreat to basic instructional modules was an important "true life" quality which should be included in the system. (Dr. Cleary confessed that she had taken Calculus without the prerequisites!)

Dr. McKinlay cautioned that the CVIS experience has shown that users often like to modify a package or select from it those parts which meet local needs. Because of this it is important to determine what combinations (or arrays) of components are acceptable from both the technical and guidance standpoints.

Dr. Prediger expressed concern about the degree of change in student record files which will be necessitated if the DISCOVER system is employed

in a school system. Mr. Augustine observed that this is a valid concern. Mr. Boyd responded by stating that the system's design will allow the DISCOVER package to operate from a mini data file which will be generated by the student as he/she works through DISCOVER. Thus the system will have the capability of operating independently of any given school system's student data file.

Dr. Bowlsbey thanked the Board members for their remarks and stated that the DISCOVER team will have many design decisions to make in the coming weeks.

A discussion followed about the project cost of operating DISCOVER. (See last page of "Technical Development Plan") This cost does not include phone lines, printer cost (approximately $150. per month), clerical help to prepare student data files, or counselors. The question was raised whether anyone would buy such a system at approximately $35,000. IBM has run a market survey and has found that there is a market at the secondary school level.

Mr. Carey suggested that a list of IBM/non-IBM hardware equivalents would be very helpful to potential purchasers of the system in weighing alternative costs. It was also observed that a cost-out for a large city school system which includes the community-use factor and the student-scheduling factor might be helpful. Experience with CVIS has shown that the administrative support functions often make the package very attractive from a cost point of view.

Dr. Holland advised that issues and information about bias be incorporated into the decision-making and self-exploration modules as an integral part of the scripts. Concern was expressed as to whether it would be possible to make DISCOVER scripts equally understandable across a wide range of reading levels (7th through 12th grade). The field test should

help to determine the success of this attempt. Modifications of reading level may be necessary based on field-test experience.

Dr. Cleary brought up the idea that the DISCOVER guidance system should possibly be incorporated into the regular curriculum in order to insure that DISCOVER becomes an integral part of the educational process. This observation led to a discussion of the importance of high-quality inservice training and manuals for teachers, counselors, and students.

A discussion of the sources for data files ensued. Dr. Bowlsbey explained just what aspects of the occupational data file would be necessary for the DISCOVER package. The concept of lifestyle as part of the occupational data file was seen as important, though perhaps too broad to be dealt with at this time. Some Board members felt that lifestyle should be left to a "second generation" of DISCOVER. Many suggestions regarding data file sources were given:

OCCUPATIONAL DATA FILE:

1. APGA Career Information Center
2. Don Dillon--Department of Labor
3. Leon Lewis--Department of Labor. Dictionary of Occupational Titles. DOT is on computer tape. ACT has a copy.
4. Career Data Book--AIR--Project Talent
5. VICS--Philadelphia public schools system.
6. Largo--now owned by Houghton-Mifflin.
7. Harcourt-Brace-Jovanovich
8. USOE Handbook Series published by SRA
9. Houghton-Mifflin
10. Jewell Boling--materials on lifestyle.

Mr. Augustine and Dr. McKinlay asked that data file requirements be sent to them.

MILITARY DATA FILE:

1. VIEW--Walter Cox, Indiana.
2. Navy as Employer--Silver Spring
3. CVIS Project--Eastern Illinois University, Charleston. Very complete military script. (Mr. Pritchard cautioned that military descriptions of training are often exaggerated.)
4. MOS-DOT translation of military occupations.

Dr. McKinlay made the observation that the military should now be regarded as one more large employer. The question was raised whether CVIS and DISCOVER can work together with DOD on the military data file.

TECHNICAL AND SPECIALIZED SCHOOLS DATA FILE:

1. Ken Hoyt
2. Veteran's Administration directory of schools.
3. Check FTC and states licensing requirements carefully.

FINANCIAL AIDS DATA FILE:

1. CEEB has publication, Meeting College Costs, which can be used as a base for researching college aid.
2. ACT has such information

Dr. Bowlsbey described the plan for field testing DISCOVER during the 1975-1976 school year. Since much depends upon future funding of the project, further analysis of direction of future development was curtailed so that more time could be spent on other items still on the agenda.

A major point of discussion was future funding of DISCOVER. Many suggestions were made as to possible sources of financial support. NSF was mentioned. Dr. Super offered the idea of a school system consortium such as Association of Public Schools and Metropolitan School Study Program of New York. The Educational Commission of States was also mentioned. Mr. Pritchard stated that the federal funding grant deadline

for Part C (Research and Development) is November 29, 1974. The idea of forming a private corporation was offered. Problems inherent with public domain and present "ownership" of DISCOVER were discussed.

The last item on the agenda was publicity. Jim Boyd would like to present a paper to a research-oriented group on the systems design of DISCOVER. It was felt that such publicity would be in the interest of the project, but articles which would lead to many inquiries at this time would not be. It was suggested that publicity begin in high-level research journals at this time and that the type of publicity which will elicit a large number of inquiries should wait until next year. Mr. Pritchard reminded that under the Public Information Act anyone can have access to information about DISCOVER. It was suggested that a special publicity campaign would be necessary if the DISCOVER team elects to persue funding by means of the consortium idea previously proposed.

The next Advisory Board meeting will be held on Friday, May 9, 1975, at Western Maryland College. Dr. Bowlsbey invited Board members to a social gathering at her home on Thursday night, May 8, and stated that lodging would be provided at a local motel.

The meeting was adjourned with Dr. Bowlsbey's thanks for a frank and fruitful discussion and with best wishes for a safe journey home.

MINUTES

Project DISCOVER Spring Advisory Board Meeting

The Spring meeting of the Project DISCOVER Advisory Board was held on the Western Maryland College campus on Friday, May 30, 1975. The following people were in attendance:

Mr. James Augustine, Jr.	Dr. Regina Wieman
Mr. Niel Carey	Dr. Frank Benham
Dr. T. Anne Cleary	Mr. James Boyd
Mr. Sherwood Dees	Dr. David Tiedeman
Dr. John Holland	Dr. JoAnn Bowlsbey
Ms. Margaret Long	Dr. Betty Bosdell
Mr. Walter O'Neill	Dr. Jack Rayman
Dr. Dale Prediger	Ms. Doris Bryson
Dr. Donald Super	Mr. Gary Gottfriedson

Dr. Bowlsbey opened the meeting with greetings and a summary of events since the Fall meeting.

Advisory Board members were given a draft of the field test plan. Two actual field test plans were outlined: one for a long period (if the project is totally funded) and one for a short period (if the funding is not to expectation). Dr. Prediger expressed concern about moving too rapidly from the field test stage to dissemination. He felt that a local field test should be followed by a more widespread field trial. Dr. Super asked if records of counselor contact time could be obtained to check traditional counseling time against time spent working on DISCOVER. It is possible, however, that individual attention does not mean growth of subject. Mr. Dees observed that evaluation

is based on written and verbal tests and asked if the evaluation might be better based on work experience or on placement of students after exposure to DISCOVER. Dr. Prediger questioned the "placement" idea; is it the student's idea or DISCOVER experience which leads him/her to apply for a certain job? How can we accurately decide where the motivation came from? Dr. Tiedeman was especially concerned with basics of the field test: does the system work? How does the person react to it? If "growth" fails to happen, don't hold the system accountable.

A discussion of the dissemination phase of DISCOVER was then held. In answer to question about life expectancy of the system, Jim Boyd stated that as long as the interface remains the same, DISCOVER will last. The problem which may occur is that someone may develop a better guidance system. The experiences with CVIS were discussed in light of the lessons which it could provide to DISCOVER in terms of dissemination. The positive side of CVIS has been that sites have been able to do "their own thing". That the price has been low and that there has been a lack of long-term maintenance is the negative side of CVIS. This discussion led to the idea that DISCOVER should be leased to users rather than sold outright. That way more control can be exercised by the DISCOVER Corporation. Walt O'Neill felt that a lease would be more attractive; the lease price would have to be relative to the possible number of programs sold. The basic suggestions regarding dissemination were: a corporation is needed to maintain control and to distribute and maintain the product; a dissemination period will need financial support for a period of time; the driving system could be marketed alone; all guidance modules should be kept together. It will be necessary

to have a lawyer compose a document which will define the corporation, its purposes, and the terms of maintenance of the product.

Jack Rayman presented the "slide show" which will be shown to prospective field test sites. There were some suggestions for rewording some of the module titles. The title for module 8 received most of the attention. Some felt that the terminology is misleading; it appears that there is only one road being explored. Dr. Super suggested a change to "Making Alternative Career Plans."

A luncheon was held for the Advisory Board members at Montour House, a local restaurant.

In the afternoon a demonstration at the DISCOVER terminal was conducted by Jack Rayman and Jim Boyd. Dr. Rayman gave a description of some of the modules and demonstrated various ways of operating the terminal to carry on a "conversation". Jim Boyd explained the DISCOVER Frame Builder capability for producing and changing text on-line.

The meeting was adjourned at approximately 3 p.m. to allow Board members to get to the airport for their return flights home.

APPENDIX 3

GUIDELINES: SCRIPT PREPARATION

1. Display size and format should be well defined (eliminate all programmer format decisions if possible).

2. Scripts should be clean and typed one display per page.

3. Special programmer instructions should be included at the bottom of each page, separated from the actual text by a line.

4. Text to appear in high intensity should be identified by underlining it in red.

5. Light pen detectable sections of text should be identified in the scripts by enclosing them with a rectangle, e.g., The entire word [discover] in this sentence would be light pen detectable.

6. All graphic displays should be on IBM 3270 format sheets or the equivalent.

7. The last 24 characters of the 24th line on the screen must be reserved for Programmer use. (As a general practice, it is a good idea to design all displays as if the maximum screen size were 80 characters x 23 lines rather than 24.)

8. Checkpoints within modules should be clearly indicated. (Points which will be stored in the computer if the student signs off so that when the student signs back on he will be able to pick up at the logical checkpoint.)

9. Displays which result in lengthy data file searches or other computer time-consuming functions should be accompanied by an explanation to the student, e.g., "It will take the system several seconds to find the answer to this question. Be patient!"

10. The following should be considered while writing all scripts:

    a. Does the script contain sex bias, ethnic bias, SES bias or any other bias? These must be avoided.

    b. Is the reading level appropriate?

    c. Is the content of the script appropriate?

    d. Is the interactive quality of the script high?....As it should be.

    e. Is the script interesting and easily readable?

    f. Have you avoided personalizing the computer? The scripts should be personalized as much as possible but the computer should not be referred to in the first person. All references to the computer should take the following form-- "The system's records show that you are in the top ¼ of your class."

    g. Has internal consistency been maintained?

    h. Does the script have a sound theoretical base?

    i. Is the script non-directive enough? We must avoid being too directive.

APPENDIX 4

FIELD TEST SITE SELECTION & EVALUATION PLAN

PLAN and DESIGN of DISCOVER FIELD TRIAL

PLAN A: February - May, 1976
(in the event of no further funding)
PLAN B: January - June, 1976
(in the event of supplemental funding from Career Education)

I. SELECTION OF FIELD TEST SITES

PLAN A: Begin with a list of all secondary-level school districts within a 50-mile radius of Westminster which already have IBM 370 machines running under CICS operating systems. Seek two sites which meet the following criteria:

1) *Have an adequate supply of the desired target population.*
   a) *grades 7-12 enrollment*
   b) *lower-class, inner-city students (one site)*
2) *Have a competent and willing guidance staff.*
3) *Have a competent technical data processing staff with teleprocessing experience.*
4) *Are willing to allow the DISCOVER staff freedom and time to do on-site observation; interviewing and administration of questionnaires; inservice training of some teachers and counselors; orientation of students; and to allow students freedom and time to use the system.*
5) *Are willing to donate sufficient computer time for the running of the field trial in return for receiving the system free of charge. Terminal equipment will be provided by the Project.*
6) *Are aware of the publicity such a field trial may generate and are willing to deal with the attendant inquiries, visitors, and opportunities.*

Approach two sites which most nearly meet all criteria with the field trial offer and plan.

PLAN B:

1. *Seek the assistance of Niel Carey and other appropriate persons in Maryland to develop a list of schools within a 50-mile radius of Westminster which meet the following criteria:*
   a) *Are representative of the desired populations: lower-class, inner-city and upper-middle class suburban secondary-level students.*
   b) *Have an openness to innovation.*
   c) *Have a competent and willing guidance staff.*
   d) *Are willing to allow the DISCOVER staff freedom and time to do on-site observation; interviewing and administration of questionnaires; inservice training of some teachers and counselors; orientation of students; and to allow students freedom and time to use the system.*

e) Might have some interest in and ability to retain the system at the close of field test.
f) Are aware of the publicity such a field trial may generate and are willing to deal with the attendant inquiries, visitors, and opportunities.

2. Rank order the resultant list based upon the degree to which each possible school meets the stated criteria.
3. Approach one site for each of the two target populations with an invitation to be a field test site, with all computer power and terminal equipment being provided by the Project.
4. In case of lack of interest or administrative approval in an invited site, go to the next in priority order.

II. TIME SCHEDULE

	PLAN A	PLAN B
May 1975	Identify possible field test sites	Identify possible field test sites.
June 1975	Invite field trial sites	Invite field test sites. Order phone lines & modems.
July 1975	Get Board approval for field trial.	Get Board approval for field test.
August 1975		Test program in Western Maryland College computer in dedicated mode.
September 1975	Plan schedule for staff inservice training, student orientation, and equipment installation.	Plan schedule for staff inservice training, student orientation, and equipment installation.
October 1975		
November 1975		Upgrade Western Maryland computer; get program at Western Maryland computer operational.
December 1975	Get program operational at host computer.	Install and test phone lines and all terminal equipment; conduct inservice staff training; conduct student orientation.
January 1976	Install and test phone lines and terminal equipment; conduct staff inservice training, student orientation.	Begin Phase I of field test.

February 1976	Begin field trial. Begin system revisions.	Begin system revisions.
March 1976		Begin Phase II of field test.
April 1976		
May 1976	Conclude field trial	
June 1976.	Complete system revisions Write field trial report.	Conclude field test Complete system revisions Write field test report.

III. RESEARCH DESIGN AND QUESTIONS

A. Plan A.

	Method
Question 1: What are the characteristics of system operation in host environments?	
a. What is the response-time range?	observation/record keeping
b. What amount of "up" and "down" time is experienced?	record keeping
c. What system "bugs" occur?	observation/record keeping
d. What difficulties, if any, are encountered by simultaneous operation of DISCOVER with other programs in the host school?	observation/record keeping
e. What is the per-hour cost of operation?	Division of cost of operation of DISCOVER per month/ potential hours of student use per month
Question 2. To what degree is the content of the system appropriate for the target populations?	
a. Is the reading level appropriate?	observation; random sample interviewing
b. Are the system instructions clear and understandable?	observation;random sample interviewing
c. Is the content of specific modules understandable and acceptable to users?	observation; random sample interviewing
d. What is the average time spent on each module: Does module content fit logically within one class period?	observation/record keeping
Question 3. What are the characteristics of voluntary system users?	
a. How many times do students	

return to use the system?	record keeping
b. How are voluntary users distributed by sex, grade level, and academic achievement?	record keeping

Question 4. What are the reported effects of system use by students?	Observation
a. How do students respond to the system?	Questionnaire Structured interview
b. What effects--such as gain in occupational knowledge, self-knowledge, specification of career goals, etc.--do users report?	Questionnaire Structured interview
c. What kinds of exploratory behaviors do students engage in after use of the system?	Questionnaire Structured interview

All of the above data will be collected as a result of accepting as many voluntary users of the system as possible during the field trial period.

In addition to collection of data from students, data will be collected from a random sample of parents and teachers and from all administrators and counselors by structured interview. Reactions will be sought in regard to a) the total system, b) the inservice training material and experience, c) the student orientation materials, and d) the professional manual.

B. Plan B.

All of the plans proposed under Plan A will also be carried out under Plan B. In addition, hard data will be sought in regard to the measured effects of student use of the system. As soon as smooth technical operation has been achieved, and answers to Plan A questions have been found, a second phase of evaluation will begin. A sample of approximately 400 students will be randomly drawn from the population at each of the two field test sites. Half of these will be randomly assigned to an experimental group and half to a control group. System use will now be confined to those in the experimental group. Each of these students will be scheduled to use the system at least four times during part two of the field test, and each will be encouraged to use the system more often. No treatment will be given to the control group by DISCOVER personnel, except pre- and post-testing. Research design will consist of pre- and post-testing of both the control and experimental groups with the instruments specified below. Data will be analyzed by grade level, sex, and quartile of school achievement both within and across test populations. Data will also be analyzed by majority-minority group membership and by socio-economic class across the two test populations. Analysis of covariance will be used to determine whether changes in specific variables are significant over time in the experimental group

as compared to the control group.

The following research questions will be asked. Expected user outcomes are stated in terms of directional hypotheses. Instruments and techniques which will be used to measure each of these variables are specified:

Research Question 1

What change, if any, is effected in self-knowledge due to use of the system?

Hypothesis: Students who use the system show a significant increase in knowledge and awareness of personal values, competencies, interests, and achievement.

Pre- and post-administration of American College Testing Program's Assessment of Career Development (ACD), making use of self-awareness scale.

Pre- and post-administration of questionnaire designed by DISCOVER team.

Research Question 2

What change, if any, is effected in occupational knowledge due to use of the system?

Hypothesis: Students who use the system will show a significant increase in cognitive knowledge about and in awareness of occupations in Holland's six occupational clusters.

Pre- and post-administration of the ACD, making use of the six occupational knowledge subscales (Holland's six groups of occupations, the same clustering system used in DISCOVER.)

Pre- and post-administration of questionnaire designed by DISCOVER team.

Research Question 3

What change, if any, is effected in decision-making and career-planning skill as a result of use of the system?

Hypothesis: Students who use the system will show a significant increase in decision-making and career-planning skill.

Pre- and post-administration of the ACD, making use of the Career Planning and Decision Making Scale.

Pre- and post-administration of the College Entrance Examination Board's new measure of decision-making skill.

Pre- and post-administration of questionnaire designed by DISCOVER team.

Research Question 4

What change, if any, is effected in progress toward specification of career goals?

Pre- and post-administration of DISCOVER questionnaire.

Hypothesis: Students who use the system will show a significant move toward specification of both educational and vocational goals.

Research Question 5

What change, if any, is effected in vocational maturity?

Pre- and post-administration of Super's Career Development Inventory.

Hypothesis: Students who use the system will show a significant increase in vocational maturity.

APPENDIX 5

OUTLINE of IN-SERVICE TRAINING PROGRAM for COUNSELORS

Outline of
In-Service Training Program
for Counselors

Estimated Training Time		
	I.	Review of Career Development Theory
1 Hr.		A. Life Stages and Developmental Tasks
1 Hr.		B. Measurement of Vocational Maturity
1 Hr.		C. Career Decision Making
1 Hr.		D. Personal Characteristics and Vocational Choice
	II.	Synthesis of Theory into a Systematic Model for Career Guidance. The DISCOVER model
1 Hr.		A. Information about self
1 Hr.		1. Values and Occupational Choice a) Study of Katz' work, ten values and occupations which relate.
1 Hr.		b) Playing of board version of Career Decision Game.
1 Hr.		2. Interests and Competencies and Occupational Choice a) The Self-Directed Search 1) take the instrument 2) learn how to interpret it
		B. Learning how to make decisions
1 Hr.		1. The classical model of decision making and decision making styles
1 Hr.		2. Super's Career Decision Tree
		C. Information about Occupations
1 Hr.		1. Classification systems a) Ideas - Data - People - Things (IDPT)
1 Hr.		b) Holland's work environment system
		2. Browsing via the Holland framework
1 Hr.		3. Contents and source of "Getting Information About Occupations"

Estimated Training Time	
	D. Using what a student knows about self and decision making to make a list of occupations to explore
1 Hr.	1. Strategies for developing a list of occupations
	2. Strategies for narrowing a list of occupations
	E. Assisting with Implementation of Career Decisions
	1. Reality testing experiences
	2. Paths of training
2 Hr.	3. Search strategies
1 Hr.	III. Why Use a Computer?
4 Hr.	IV. Use of the DISCOVER System
2 Hr.	V. The Counselor Role
	A. Providing orientation to the system
	B. Being an engineer of experience to help students try out tentative choices
	C. Answering questions which result from use of the system
	D. Helping students evaluate the alternatives found through the system and to make choices
	E. To assist with the implementation of specific plans

APPENDIX 6

CONTRACT with CONSULTING PSYCHOLOGIST PRESS

CONSULTING PSYCHOLOGISTS PRESS, INC.

577 College Ave., Palo Alto, Calif. *Tel. 326-4448, Area Code 415*

October 30, 1974

Dr. JoAnn Harris Bowlsbey
Director, Guidance Development
Project DISCOVER
Western Maryland College
Westminster, MD 21157

Dear JoAnn:

In response to your letter of October 15th, we are pleased to quote the following terms for the operational use of the Self-Directed Search in your computerized DISCOVER program:

Annual Fee Per Single School $200.00

If more than one high school in a single school district wishes to use the program, the fee for two schools would be $350.00, and for each additional school, $150.00.

All schools in the DISCOVER program would be entitled to a special discount of ten per cent (10%) on any SDS materials purchased from us, in addition to any quantity or other discounts to which they were entitled.

These terms would be guaranteed for each of the first two years of the program. At the end of the first year, we would ask you for data on the actual use of the SDS on DISCOVER terminals and we will tabulate any sales of SDS materials by us to schools in your program. If the averages from the 20 schools (or other number) vary from your estimate by more than 25 per cent, we will revise the fees for the third and subsequent years.

It is my intention that we would adjust them in either direction depending upon the data. At that time we could also provide prices for a one-time payment covering five years of use by a school or district; such an arrangement would probably be equivalent to receiving one of the five years of use free of charge.

These terms presuppose the DISCOVER agency providing proper protection of our copyright interests and taking appropriate steps to insure that computer programs are not copied or made available to schools which have not subscribed to the program. The terms also require that the distributor of DISCOVER either collect the

fees from the school for transmittal to us or at least guarantee to pay the fee if the school does not. Finally, we are not asking any minimum total payment.

If there are questions about any of the foregoing, I would certainly welcome them, or if there are additional quotations or alterations you feel would be helpful, don't hesitate to ask. I have tried to keep the charges as low as I could in terms of our contractual obligations for I know John Holland would like to see you use the SDS in the program and I would too.

We will look forward to hearing from you.

Sincerely,

John D. Black
President

JDB/jes

APPENDIX 7

CONTRACT with HOUGHTON MIFFLIN

Houghton Mifflin Company

October 23, 1974

Mrs. JoAnn Harris Bowlsbey
Director-Guidance Development
Western Maryland College
Westminster, Maryland 21157

Dear Mrs. Bowlsbey:

Thank you for your letter of October 15th; it has proved most helpful to us in our considerations.

First, I must point out that while I have reason to believe that the proposal set forth below will be approved by my seniors, it is subject to their approval should you find it agreeable. Secondly, simply to set the record straight, your October 15th letter refers to "our present agreement" - we have no "present agreement."

Now as to my proposal:

The following proposal is one I am prepared to submit for approval here, subject to your ability to provide complete copyright protection for all of the materials and data involved. In the development of this proposal I have used the data you provided in your October 15th letter as the basis for time and probable usage of our published and copyrighted materials and data. This proposal, I believe, satisfies both your needs and our obligations to our authors.

1. Permission to load any of the CPP 8-11 materials and data on tape, disc, cards, or other means compatible with your computer equipment, and to use the program in a computer mode via terminals for experimental (developmental) work through June 30, 1976. There will be no charge for this permission.

2. On July 1, 1976, or upon the publication and/or dissemination of Discovery, whichever may be the earlier date, a lump sum payment of $2,500 shall be made to Houghton Mifflin Company by the agent or agency responsible for the distribution and/or dissemination of Discovery. On June 30, 1977, the agent or agency shall report the number of computer uses of CPP 8-11 during the previous year together with a payment of $.20 per use for the number by which said use exceeds 12,500.

EDUCATIONAL DIVISION
One Beacon Street Boston, Massachusetts 02107 (617) 725-5000 Cable HOUGHTON
BOSTON ATLANTA DALLAS GENEVA, ILL. HOPEWELL, N.J. PALO ALTO LONDON

3. On July 1, 1977, a payment of $5,000 shall be made in the same manner as described in (3) above, and on June 30, 1978, a usage report shall be submitted in like manner. Together with this report shall be included payment of $.20 per use for the number by which the prior year's use exceeds 25,000.

4. The July 1 lump sum payments described in (3) and (4) above are viewed as usage guarantees, none of which is returnable should usage not meet the minimums anticipated.

5. This agreement ends at the close of the business day of June 30, 1978. A new agreement may be negotiated by the interested parties at any time thereafter.

By way of explanation and clarification, the following:

1. It should be emphasized that we will make no agreement without your absolute guarantee of copyright protection. Discovery must be liable for any problems arising from its use of the material and/or data.

2. Note that the payments to be made to the Publisher must be made by the agent or agency having distribution or dissemination rights. It is his (their) responsibility to set up and police a record keeping system in order that an accurate report of use of our CPP 8-11 program via computer can be made annually as specified. I would assume that any contract or agreement covering a situation of this kind would include the right to audit.

3. While the subject of special materials has been discussed, your letter of October 15th states that "There will be no need for publication of special materials..." For this reason, nothing has been included herein covering this subject.

4. Nothing is implied herein that any subsequent agreement might be similar to that proposed herein. Since CPP 8-11 is a new program, we have no experience on which to base our costs, income, etc. Presumably we shall have such information when a new agreement might be negotiated, and I would assume we would use the then available experience in the development of that agreement.

5. I think the matter of what constitutes a "use" of the CPP 8-11 must be defined in any agreement we might have. Because we are pressed for time, I have no significant thinking to contribute on this point at the moment. I would hope we could work this out to the satisfaction of both parties - indeed I am confident that we can. Please give me your thoughts on this matter.

6. I presume it is clear that nothing can be done until an agreement is signed; when you have indicated that this proposal is satisfactory to you I will immediately seek approval here, and if secured, will immediately proceed toward

development of a contract.

I hope that what we have done will meet your needs, and will enable you to proceed with the decisions you must make.

Sincerely,

John Sommer, Manager
Department of Measurement & Guidance

JS/at

cc: Dennis Palmer
John Riordan

APPENDIX 8

AGREEMENT with ETS REGARDING the USE of KATZ'S VALUES

EDUCATIONAL TESTING SERVICE PRINCETON, N.J. 08540

Area Code 609
921-9000
CABLE-EDUCTESTSVC

February 14, 1975

Mrs. JoAnn Harris Bowlsbey
Western Maryland College
Westminster, Maryland 21157

Dear Mrs. Bowlsbey:

Confirming our recent telephone conversation, ETS is pleased to grant you royalty-free permission to use the attached ten work values and their definitions in your guidance system, called DISCOVER. DEC has agreed that since this constitutes only a small portion of the entire SIGI system, such use will not be in violation of the intent of the ETS-DEC agreement.

It is understood that this permission applies to use in your DISCOVER system only, as described in your letter to Martin Katz dated September 13, 1974, and that you will use the following credit line, where appropriate, including on print-out:

> From System of Interactive Guidance and Information (SIGI). Copyright © 1972, 1974 by Educational Testing Service. All rights reserved. Adapted and reproduced by permission.

If these arrangements are satisfactory, please sign both copies of this letter and return one copy to me for our records.

Sincerely,

(Mrs.) Dorothy Urban
Copyrights, Licensing and
Permissions Administrator

DU/lrs

cc: Mr. Katz
Mr. Kroll

ACCEPTED AND AGREED TO:

JoAnn Harris Bowlsbey

Name _____ School _____ Grade _____

STUDENT QUESTIONNAIRE

1. Below is a list of satisfactions or values that people might consider important in choosing an occupation. Read the definition of the value on the pages attached and then show how important it is to you by selecting a number from 0 to 8 (see the scale below). Place the number in Column 1. EXAMPLE: If High Income is of moderate importance to you, place the number 4 in Column 1; if you can't decide whether its importance to you is slight or moderate, place the number 3 in Column 1.

Column 1		Column 2
_____	HIGH INCOME	_____
_____	PRESTIGE	_____
_____	INDEPENDENCE	_____
_____	HELPING OTHERS	_____
_____	SECURITY	_____
_____	VARIETY	_____
_____	LEADERSHIP	_____
_____	INTEREST FIELD	_____
_____	LEISURE	_____
_____	EARLY ENTRY	_____
Sum of Col. 1 =		40

SCALE

Importance of value to you	Rating
None	0
	1
Slight	2
	3
Moderate	4
	5
Strong	6
	7
Greatest	8

2. Add the numbers in Column 1. If the sum of these numbers does not equal 40 re-rate the values to make them sum to 40. (Use Column 2.) Do not erase the numbers in Column 1.

3. Check the field that most interests you.

_____SCIENTIFIC - data, knowledge, observations, analysis. Example: physicist.

_____TECHNOLOGICAL - things, machines, mechanical skills. Example: toolmaker.

_____ADMINISTRATIVE - business, finance, records, systems. Example: accountant.

_____PERSONAL CONTACT - people, selling, supervising. Example: salesman.

_____VERBAL - words, reading, writing, talking, listening. Example: journalist.

_____ARTISTIC - painting, sculpture, design, music. Example: artist.

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All rights reserved.

DEFINITIONS OF THE TEN OCCUPATIONAL VALUES

HIGH INCOME: Some minimum income (enough for survival) is essential for everyone. But beyond that, how important to you are the extras? People have different ideas about how much income is "high." Therefore, HIGH INCOME is not defined here as a specific amount. It means more than enough to live on. It means money to use as you wish after you have paid your basic living expenses. You can buy luxuries and travel first class. Choose a number (0-8) to show how important it is to you to find an occupation that pays more than what you need to live on.

PRESTIGE: If people respect you, look up to you, listen to your opinions, or seek your help in community affairs, you are a person with PRESTIGE. Of course, PRESTIGE can be gained in several ways. But in present-day America, occupation is usually the key to PRESTIGE. Rightly or wrongly, we respect some occupations more than others. Choose a number (0-8) to show how important it is to you to work in an occupation most people look up to.

INDEPENDENCE: Some occupations give you more freedom than others to make your own decisions, to work without supervision or direction from others. At one extreme might be talented free-lance artists or writers who may work without supervision. At the other extreme might be military service or some big business organizations with chains of command which severely limit the decisions that each person can make. Choose a number (0-8) to show how important it is to you to be your own boss and to make your own decisions about your work.

HELPING OTHERS: Most people are willing to help others, and show it every day outside of their work. They put themselves out to do favors, make gifts, donate to charities, and so on. THIS DOES NOT COUNT HERE. The question here is, Do you want HELPING OTHERS to be a main part of your occupation? To what extent do you want to devote your life work directly to helping people improve their health, education, or welfare? Choose a number (0-8) to show how important it is to you to find opportunities for HELPING OTHERS in your occupation.

SECURITY: In the most SECURE occupations, you will be free from fear of losing your job and income. You will have tenure--that is, you cannot be fired very easily. Employment will tend to remain high in spite of recessions, and there will be no seasonal ups and downs. Your income will generally remain stable and predictable; it will not vanish with hard times. Your occupation is not likely to be wiped out by automation or other technological changes. Choose a number (0-8) to show how important it is to you to work in an occupation that offers steady employment and income.

VARIETY: Occupations with the greatest VARIETY offer many different kinds of activities and problems, frequent changes in location, new people to meet. VARIETY is the opposite of routine, predictability, or repetition. If you value VARIETY high, you probably like novelty and surprise, and enjoy facing new problems, events, places, and people. Choose a number (0-8) to show how important it is to you to find an occupation that offers ever-changing problems, activities, places, and people.

LEADERSHIP: Do you want to guide others, tell them what to do, be responsible for their performance? People who weight LEADERSHIP high usually want power to control events. They want to influence people to work together effectively. If they are mature, they know that RESPONSIBILITY goes with LEADERSHIP. They are willing to accept the blame when things go wrong, even though they were not at fault. Choose a number (0-8) to show how important it is to you to direct other people in their work and be responsible for their performance.

WORK IN YOUR MAIN FIELD OF INTEREST: Some people have only one main field of interest (Scientific, Technological, Administrative, Personal Contact, Verbal, or Aesthetic); others are interested in two or more of these fields. Some insist that their occupation must be in one of their major fields of interest. Others are willing to work in a field that is less interesting; they feel they can satisfy their main interest in their spare time. Choose a number (0-8) to show how important it is to you to work in one of your main fields of interest instead of some other field.

LEISURE: How important is the amount of time your occupation will allow you to spend away from work? LEISURE may include short hours, long vacations, or the chance to choose your own time off. To give a high weight to LEISURE is like saying, "The satisfactions I get off the job are so important to me that work must not interfere with them." Choose a number (0-8) to show how important it is to you to be able to take a lot of time off from work.

EARLY ENTRY: How important is it to you to enter an occupation right away? You can enter some occupations with very little education or training. Other occupations require years of expensive education, delaying your entry into the occupation. If EARLY ENTRY is important to you, this means that you would not be willing to put up with a long period of education or training, and you should give EARLY ENTRY a high number. If you are willing to delay entering an occupation and go through additional years of education and training, then EARLY ENTRY is less important to you, and you should give it a low number.

APPENDIX 9

PLAN for the DISSEMINATION and MAINTENANCE of DISCOVER

A PLAN for the DISSEMINATION
and MAINTENANCE of DISCOVER

Submitted to the United States Office of Education
August, 1975

I. Definition of DISCOVER

DISCOVER is an integrated package of computer software and supporting documentation developed with funding from the State of Illinois Division of Vocational and Technical Education, the United States Office of Education, and the IBM Corporation from September, 1972, through June, 1976. The computer software includes the following:

A. A DISCOVER language and Frame-Builder.

B. Twenty-one (21) distinct modules of interactive career guidance and experience for direct student use, including:

1. *Entry*
2. *Understanding My Values*
3. *Playing a Values Game*
4. *Learning to Make Decisions*
5. *Practicing Career Decisions*
6. *Learning How Occupations Can Be Grouped*
7. *Browsing Occupations*
8. *Reviewing My Interests and Strengths*
9. *Making a List of Occupations to Explore*
10. *Getting Information about Occupations*
11. *Narrowing My LIst of Occupations*
12. *Exploring Specific Career Plans*
13. *Local Jobs*
14. *Financial Aid*
15. *Apprenticeships*
16. *Four-year College Information and Search*
17. *Community and Junior College Information and Search*
18. *Graduate and Professional Schools*
19. *Technical and Specialized Schools*
20. *Continuing Education*
21. *Military*

C. A package of Counselor-support and Administrative functions, including:

1. *On-line access of Student Data Base including the ability to retrieve, update, add, and delete both records and fields within records.*
2. *On-line changing of schedules including adding and dropping of courses. This should be designed with current emphasis on individualized instruction in mind.*
3. *Master schedule maintenance.*
4. *Grade changes including updating and adding grades.*
5. *Limited on-line query capabilities on Student Data Bases*

and DISCOVER-related Data Bases.
6. Statistical reports on specified elements of the Data Bases.
7. On-line attendance control.
8. On-line test scoring capability.
9. On-line entry of course requests.

D. The computer code which makes all of the above operate.
E. The documentation of the DISCOVER product which includes:
1. Technical data-processing documentation--a printed manual accompanied by an audio-tutorial tape.
2. A professional manual for use by teachers, counselors, and administrators.
3. An inservice training manual outlining an inservice program for staff in implementing sites.
4. An evaluation manual, describing design and providing instruments for the evaluation of the product in implementing sites.

In addition to the materials listed above, all original products of the DISCOVER project, the system contains two copyrighted instruments whose copyright must be protected and for which the DISCOVER project must pay royalties after the field-test stage. These instruments are:

A. The Self-Directed Search by John Holland, published by Consulting Psychologists Press, Palo Alto, California.
B. Selected parts of the Career Planning Program, 8-11, developed by the American College Testing Program, Iowa City, Iowa. Marketing rights and copyright are held by Houghton-Mifflin, Boston, Massachusetts.

As soon as the entire system is completed, it will be copyrighted by the DISCOVER Project.

II. Proposed Method of Distribution and Maintenance of the DISCOVER Products

It is proposed that a DISCOVER Not-for-Profit Corporation be formed as soon as approval is received to do so. Officers of this Corporation would be the present primary developers, namely:

Mr. James Boyd	Project
Dr. JoAnn Harris-Bowlsbey	Co-Directors
Mr. Tom Boyle	Project
Dr. Jack Rayman	Asst. Directors

The functions and purposes of this Corporation would be as follows:

A. To distribute the DISCOVER products.
B. To maintain the DISCOVER products, including script, computer programs, and data files.
C. To provide guidance and technical assistance to users and potential users of the system through phone conversation, correspondence, and/or on-site visitation.
D. To provide training workshops with both guidance and technical content for users and potential users at the Corporation's home base site, in various regions of the nation, and at user sites

by invitation.

E. To continuously promote the product through professional writing, professional meetings, direct mailings, and other avenues.

F. To engage in new development in the fields of computer-assisted guidance and computer-assisted instruction. This may include development of totally new products under its own name or development of tailor-made products for others under sub-contract.

G. To form and maintain an active Consortium of DISCOVER users and to promote communication among them via annual meetings, quarterly newsletter, and informal channels.

H. To pay the royalties on behalf of system users for the on-line use of copyrighted instruments.

It is proposed that the Corporation have a Board of Directors made up of some members of the present DISCOVER Advisory Boards (one for guidance and one for administrative-support functions). The functions of this Board of Directors are to set policy for the Corporation and to monitor its activities.

III. Proposed Packaging and Pricing

It is proposed that the total DISCOVER product (as defined in Part I) be distributed as a single entity, although user sites may choose not to use all parts of the package.

Further, it is proposed that the DISCOVER package be distributed on a one-year lease basis by contract between the DISCOVER Corporation and the user site (state, county, agency, regional district, individual school, etc.)

It is proposed that the price for one year of lease and maintenance (including updates on data files and royalty payments) be set by the members of the proposed Corporation and representatives of the two present funding agencies.

IV. Date of Beginning Distribution

It is proposed that the DISCOVER products be disseminated beginning on September 1, 1976.

APPENDIX 10

PROJECT DISCOVER: BUDGET

Project DISCOVER

July 1, 1974 - Aug 30, 1975

ITEM	Former Budget	Revised Budget	Reason for change, if any
A. Personnel			
1. Project Director-Guidance Dev. 75% time for 12 mos (Sep 1, 1974-Aug 30, 1975) JoAnn Harris	$17,000	$17,000	
2. Associate Project Director - 100% time for 12 mos (Sept 1, 1974-Aug 30, 1975). To be hired.	16,000	16,000	
3. Senior Investigator. 25% time for 12 mos. (Sept 1, 1974-Aug 30, 1975). Betty Bosdell	6,815	6,815	
4. Senior Investigator - 25% time - David Tiedeman	8,668	None	Project move to Maryland; Dr. Tiedeman will be used as a consultant instead and is included in Item H1.
5. Project Director - Technical Development. 100% time for 14 mos. (July 1, 1974-Aug 30, 1975) James Boyd	None	28,000	Need for programming of system within this budget since IBM support is not forthcoming.
6. Two System Analysts-Programmers 100% time for 14 mos. (July 1, 1974-Aug 30, 1975). To be hired.	None	32,000	Same as above
7. Four Graduate Assistants-50% time for 12 mos. (Sept 1, 1974-Aug 30, 1975)	15,400	15,400	
8. Two Secretaries, 1 secretary at 100% time for 12 mos (Sep 1, 1974-Aug 30, 1975) for guidance develop.; one secretary at 100% for 14 mos. for technical development	9,000	12,000	Additional needs for technical development: Key punching, on-line entry of program and text, typing of technical documentation
	$72,883	$127,215	
B. Fringe Benefits	7,513	13,103	Increased personnel salaries (items A 5, 6, 8)

C. Travel Travel of co-directors between Illinois and Maryland for co-ordination of technical and guidance develop. (6 trips); travel of Director to Educ. Testing Service (1 trip from Md. to Princeton, N.J.) Travel of Director to Consulting Psych. Press (1 trip from Md. to Calif).	3,000	1,900	Cut to bare bones; attendance at professional conventions eliminated.
D. Equipment (Non Expendable Property)	450	450	
E. Supplies			
1. Three four-drawer file cabinets	210	210	
2. Office Supplies (file folders, Stationery, envelopes, file trays, etc.)	700	700	
3. Data Processing Cards & Supplies	450	300	
F. Contractual			
1. Telephone	1,200	1,200	
2. Duplicating	600	600	
3. Printing Costs	2,500	2,328	
4. Preparation of Data Files	40,000	None	Data files will be financed in another way. (See transmittal letter.) Change is necessary in order to allow funds for technical development.

F. 5. Contract with Consult. Psych. Press (use of SDS on line)	10,000	2,000	Will serve as "down payment" to allow use of instrument during testing, debugging and field test time. Individual sites will pay fee during regular operation.
6. Contract with Educational Testing Service (use of 10 work values)	10,000	None	Change is necessary in order to allow funds for technical development. Will attempt to use this material either without charge or with later payment.
G. Construction	None	None	
H. Other			
1. Honoraria for Advisory Bd. & consultants	2,500	2,000	Cut to bare bones.
2. Travel for Advisory Bd. & Consultants	3,200	3,200	
I. Total Direct Charges	155,206	155,206	
J. Indirect Costs (41.08% of personnel salaries)	29,940	29,940	

APPENDIX 11

DIVISION OF FUNDS (SUGGESTED)

PROJECT DISCOVER

July 1, 1974 - August 30, 1975

Suggested Division of Funds

Item	Northern Illinois University	Western Maryland College	Other College of DuPage
A. Personnel			
1. Harris		$17,000	
2. Associate Director - Guidance		16,000	
3. Bosdell	$ 6,815		
4. Boyd			$28,000
5. Two Systems Programmers			32,000
6. Graduate Assistants	3,850	11,550	
7. Two Secretaries		9,782	2,218
	$10,665	$54,332	$62,218
B. Fringe Benefits (10.3%)	$ 1,098	$ 5,207	$ 6,798
C. Travel	none	$ 1,900	none
D. Equipment	none	$ 450	none
E. Supplies	none	1,210	none
F. Contractual	none	6,128	none
G. Construction	none	none	none
H. Other	none	5,200	none
I. Total	$11,763	$74,427	$72,798
J. Indirect Costs	$29,940 (To be divided with Western Maryland as agreed)		

APPENDIX 12

ABSTRACT

NEWSLETTER

A COMPUTER-BASED CAREER GUIDANCE
AND COUNSELOR-ADMINISTRATIVE SUPPORT SYSTEM

NEWSLETTER

September 1975

GREETINGS FROM PROJECT DISCOVER

Much has happened since we last communicated with you. This Newsletter is our way of bringing you up to date on recent developments.

We are happy to announce that we have received funding which will allow us to conduct a field trial of the DISCOVER system. The funding source will again be the U. S. Office of Education, Vocational Education, Part C, and the funding period will be from September 1, 1975, through June 30, 1976.

After considering four different field-trial locations in the state of Maryland, a decision has been made to conduct the field trial in the Baltimore City school system. The field trial will be run during second semester, starting in late January or early February of 1976 and ending in June.
Final details of the field trial have not yet been specified, but they will be made public soon.

An eminent Advisory Board for DISCOVER Administrative Functions has been established. This Board, under the direction of Mr. James Boyd, has met and developed a list of nine administrative functions which will be incorporated into the DISCOVER Administrative System. These functions will include the following:

On-line access of Student Data Base, including the ability to retrieve, update, add, and delete both records and fields within records.

On-line changing of schedules including adding and dropping of courses. This should be designed with current emphasis on individualized instruction in mind.

Master schedule maintenance.

Grade changes including updating and adding grades.

Limited on-line query capabilities on Student Data Bases and DISCOVER-related Data Bases.

Statistical reports on specified elements of the Data Bases.

Project based at Western Maryland College, Department of Education, Westminster, Maryland 21157 Phone (301) 848-1113

Project DISCOVER

A Computer-based Career Guidance and Counselor Support System

Over the past ten years there has been an increasing interest in the use of the computer as a medium for the delivery of career guidance. More specifically, computer systems have been designed to assist students with the broad exploration of educational/vocational alternatives and the subsequent narrowing of these alternatives through the sorting of large data files by user-identified characteristics. Since 1966 ten computer-based guidance systems have been developed which make use of terminal devices (typewriters or cathode ray tubes) connected to a central computer system by phone lines. Such a configuration allows the development of a system which simulates a structured interviewing technique. By means of interactive dialogue between computer and student and the use of data about the user (stored in the computer's memory), it is possible to provide individuals with a personalized, sequential program of career guidance which is user controlled.

The ten systems developed since 1966 have had varying survival rates depending upon their cost, ease of transportability, and breadth of function. The system which is currently most "alive and well" is the Computerized Vocational Information System (CVIS), developed at Willowbrook High School with funding from the Illinois Division of Vocational and Technical Education

(DVTE). CVIS operates in approximately 150 schools in the United States and offers vocational exploration (approximately 400 occupations) and information and search strategy for four-year colleges, community colleges, technical/specialized schools, apprenticeship programs, military programs, financial aids, and local jobs. The system also offers an array of sophisticated administrative functions such as scheduling, schedule changing, attendance keeping, and student record retrieval. The product is in public domain and is sold as a package (computer tape and six documentation manuals). An active consortium of users continues to maintain the data files and to add new capabilities to the system. User experience indicates that the system costs approximately $2.00 per student hour of use.

Because of the success of the CVIS system, the Illinois DVTE contracted with Willowbrook High School for the conceptualization of a new, more comprehensive and more advanced system, now called DISCOVER. There were several reasons for studying the feasibility of a new product: a) the life of a computer program is generally considered to be five years; b) the CVIS team, having learned a great deal through its previous development experience, felt capable of producing an even better system; c) CVIS was considered to be a good system for search and retrieval of information; however, the increasing emphasis on career education made a more comprehensive, second-generation system in support of sequential career development desirable; and d) CVIS was not conceptualized as a transportable system and therefore posed certain limitations on its users. The end product of a year of work (school year 1972-1973) by a six-member development team was a two-volume conceptualization of a new computer-based career guidance and administrative-counselor support system.

The DISCOVER system was conceptualized in three distinct, though inter-

acting,parts: the guidance subsystem for direct use by individuals at three age levels (grades 4-6, grades 7-12, adult) seeking career guidance; the counselor-support subsystem for use by counselors; the administrative-support subsystem for use by administrators.

During the 1973-1974 school year limited funds were available from Illinois DVTE to begin work on the grades 7-12 guidance subsystem; the interactive dialogue was scripted in first draft for nine of the system's nineteen modules.

Funding was received for the present work from Vocational Education Research, Part C, for the period of July 1974 through August 1975. The overall purpose of the present work is to operationalize the major part of the grades 7-12 guidance subsystem through implementation of the following tasks:

1. Revision of the scripts for the nine modules completed last year and putting them in final form for programming.
2. Writing of scripts for the remaining ten modules of the guidance subsystem and putting them in final form for programming.
3. Definition and collection of all data files.
4. Total technical design of the system.
5. Detailing all administrative- and counselor-support functions.
6. Programming of 13-15 modules of the guidance subsystem and of all the support framework (data file handling and update, data entry, input-output interface, etc.)
7. Preparation of prototype manuals for field test--including teacher, counselor, student, and data processing manuals.
8. Selection of sites and planning for field test.

In order to achieve these goals, a three-person guidance team (JoAnn

Harris-Bowlsbey, Jack Rayman, Doris Bryson) with secretarial support has been hired and based at Western Maryland College in Westminster, Maryland. A three-person technical team (James Boyd, Tom Boyle, Bill Burton) has been hired and is based at College of DuPage in Glen Ellyn, Illinois. The two teams are connected by phone lines and terminals. Programs are entered into the computer from the Illinois site; they are checked, debugged, and tested to a minimal degree with students at the Maryland site.

The medium for delivery of DISCOVER is a third-generation IBM computer system and cathode ray tube terminals with light-pen capability. Page 8 shows a diagram of the guidance system to be implemented under the present funding. The functions of each of the modules under development are as follows:

00. ENTRY

The entry module introduces the user to the system, teaches him/her how to use the terminal, and explains the many special features of the system. It monitors each person's use of the system, recording each entry and exit point to facilitate long-term use. Each user has the opportunity to complete an on-line career development inventory. This inventory is scored and the results serve as the computer's guide in suggesting which modules of the system will be most appropriate for a given user.

1A. UNDERSTANDING MY VALUES

This module contains a number of experiences which lead the user to think about what a value is, to analyze personal values, and to decide upon actions to implement those values. The last part of the module proposes ten to fifteen values related to occupations. The student rates the personal importance of each of these ten to fifteen values and may then ask the computer to search its data file for occupations which can provide the combination and weighting of the values assigned by the user. The summary of work values is retained for later use in the system.

1B. PLAYING A VALUES GAME

This module is a monopoly-like game designed by the DISCOVER team which may be played by one or two players. In the beginning of the game, the student is introduced to the concept of weighting values. He/She is invited to place relative weight on three possible goals; income, recognition, and happiness.

Winning the game consists of reaching the goal which the user has set for himself/herself in each of these categories. The user plays the game by moving forward on a board as determined by the computer in random "throwing of the die." The spaces on which the user lands may provide him/her with an opportunity to make decisions about choice of occupation, educational options, use of leisure time, or life style. On the other hand, they may subject him/her to some of life's events, such as unexpected setbacks, unexpected opportunities, and payment for necessities such as housing, clothing, and transportation. The user also acquires "plan cards" which allow him/her to have more control over life than the computer's rolling of the die affords. The way in which decisions are made on the "decide" squares may add points toward the values for which the players are playing the game. The game ends when the player has received the score previously set for himself/herself under the categories of income, recognition, and happiness.

2A. LEARNING TO MAKE DECISIONS

This module attempts to teach a planful decision-making process by presenting the process in flowchart form. The system provides a number of exercises designed to illustrate and provide practice in the decision-making steps. The system also illustrates by use of the flowchart other non-planful decision-making strategies (intuitive, impulsive, delaying, agonizing, etc.) and assists the user to identify his/her present style of decision making.

2B. PRACTICING CAREER DECISIONS

This module makes use of a career decision tree designed by Donald Super and colleagues as an organizing principle for understanding how decisions affect occupational choice. Since each of the 22 branches of the tree represents a group of occupations, the tree structure is used 1) to show the key decisions which lead up to entry into a given occupation, 2) to plot a given user's course up the branches of the tree, 3) to simulate the career paths of others, and 4) to allow the user the opportunity to "play" his/her own life in a variety of ways by making decisions in this low-risk, simulated way.

3A. LEARNING HOW TO GROUP OCCUPATIONS

This module presents the world of work by way of two organizing principles: the data-people-things-ideas division which is the American College Testing Program's refinement of the Dictionary of Occupational Titles classification system and Holland's six groups. A number of exercises are presented to give the student practice at using these classification systems: the student's responses are monitored for the purpose of providing more instruction if needed.

3B. BROWSING OCCUPATIONS

This module makes use of the Holland classification system presented in Module 3A as an organizational structure by which the

user can browse the world of work. The module allows him/her to touch any two points of the Holland hexagon and to be presented with a list of occupations which fall in that particular segment of the circular world of work. The user may select titles from the list and ask for work duties, activities, and setting.

4. REVIEWING MY INTERESTS AND STRENGTHS

This module is John Holland's Self-Directed Search or ACT's Career Planning Program administered on-line. Future system users will have the opportunity to select one of these alternate modules for use. These instruments are self-reports of the user's career-related interests, experiences, and competencies. The data, collected via the items on the instrument, give the user a focus for exploration in the world of work. The results of the instrument are interpreted to the user.

5. MAKING A LIST OF OCCUPATIONS TO EXPLORE

This module provides the user with alternate ways to generate a list of personal vocational options a) by relationship of occupations to personal work values, b) by use of the results of the Self-Directed Search or the Career Planning Program, c) by selecting titles from a list of occupations by the terminal, and/or d) by combining selected occupational characteristics (such as salary level, place of work, level of training, degree of independence, etc.)

6. GETTING INFORMATION ABOUT OCCUPATIONS

This module allows the user to get a great deal of information about the occupations on his/her list. In a series of displays, the user may receive information about a job, its duties, benefits and limitations, educational requirements, future outlook, and additional sources of information. The user also has the capability to review his/her own student record (record of grades in related courses, related work or course experience, present rank in class, etc.) against the requirements of the job or its prerequisite training. The module also provides the capability to compare two occupations by calling in data about both simultaneously. The user leaves this module with a list of occupations in which he/she has serious interest. This list may be a shortened form of the list with which he/she entered the module or may be a new list which has been generated by one of the methods listed above.

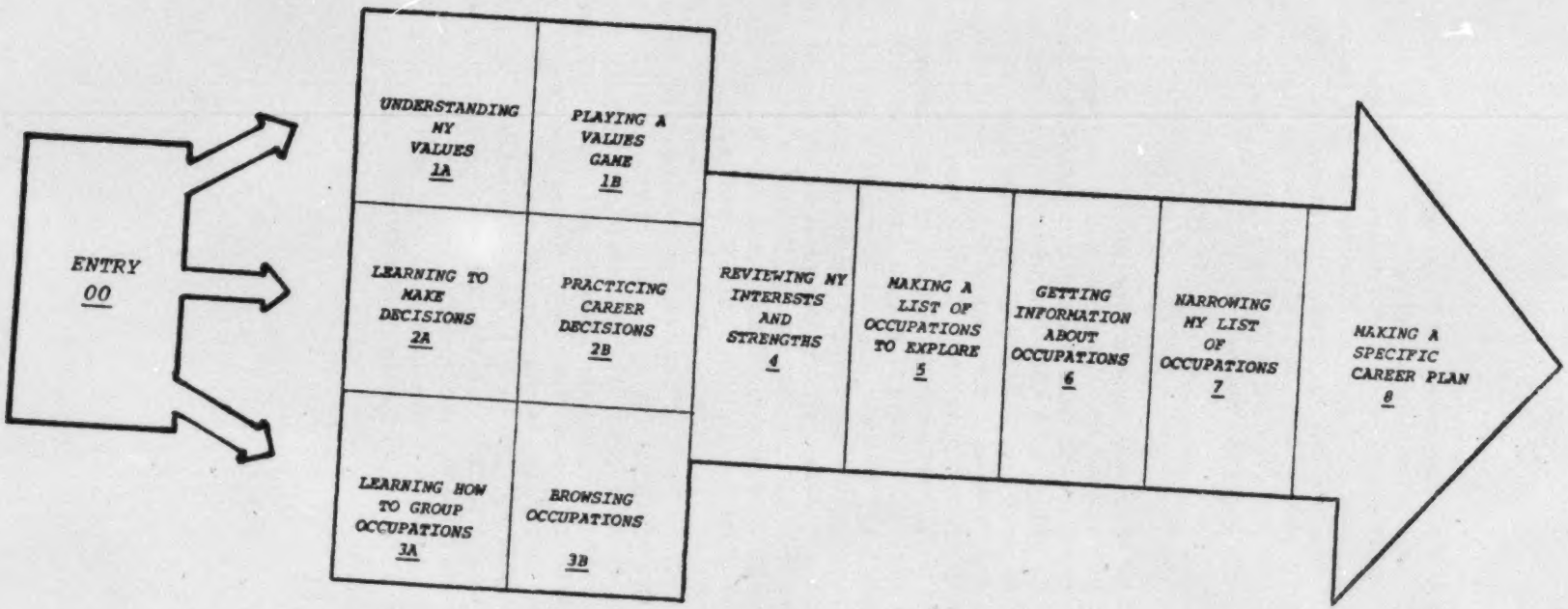
7. NARROWING MY LIST OF OCCUPATIONS

The user enters this module with the list of occupations from the previous module or with a new one which he/she generates at the beginning of the module by selecting job titles from a list or by searching the data file by a combination of job characteristics. The purpose of this module is to assist the user to narrow the list further so that he/she leaves the module with a first choice occupation in mind and a limited number of others

in priority order. This narrowing is assisted by the capability to 1) ask for additional information about any occupations on the list, 2) compare information about two occupations, and 3) analyze the remaining occupations in light of identified work values, desired level of training, and interests/competencies. Finally, the user is asked to remove occupations which are no longer of interest and to put the others in priority order. The user leaves the module with a top-priority selection.

8. MAKING A SPECIFIC CAREER PLAN

The user enters this module with one specific occupation in mind for which he/she wishes to implement a career plan. The module takes the user through four specific steps. The first is choosing the plan of entry into the occupation. For some occupations there may be only one road, such as four-year college; for others, there are several roads, such as on-the-job training, community college technical programs, private vocational schools, or the military. The second step is a look at the courses in high school which may best facilitate this plan. From this point, the user might branch to "Request A Course" which allows him/her to register for the following semester, year, or quarter. The third step is a look at role-testing experiences which the student has had in relation to this occupation, such as part-time jobs or participation in related extra-curricular activities. Additional role testing experiences are recommended if the user's experience seems to be inadequate. The fourth step is the choice of a specific place or institution in which to implement the vocational choice or to get the training for it, i.e., the choice of a local company, technical school, community college, continuing education program, college, military program, or apprenticeship. Planning may also involve finding appropriate loan funds, grants, or scholarships. The completion of the fourth step involves very sophisticated searches and interaction with nine large data files. These same data files are used for the counselor-support system. The user may enter this module and go directly to any of these search programs or recall information about any of the schools or programs in the file without going through the complete module.



THE DISCOVER SYSTEM

On-line attendance control.

On-line test scoring capability.

On-line entry of course requests.

The administrative portion of the System is still in the design stage and will not be ready for dissemination until sometime after the Guidance portion.

Guidance development is progressing well, and a target dissemination date has been set. The DISCOVER team is now committed to a development schedule which should see the DISCOVER guidance system ready for dissemination on September 1, 1976. Details of the dissemination strategy will be contained in a future Newsletter.

We hope you have had a pleasant summer and we look forward to a continuing professional association with you.

Sincerely,

JoAnn Bowlsbey

JoAnn Bowlsbey
Guidance Development

Jim Boyd

Jim Boyd
Technical Development

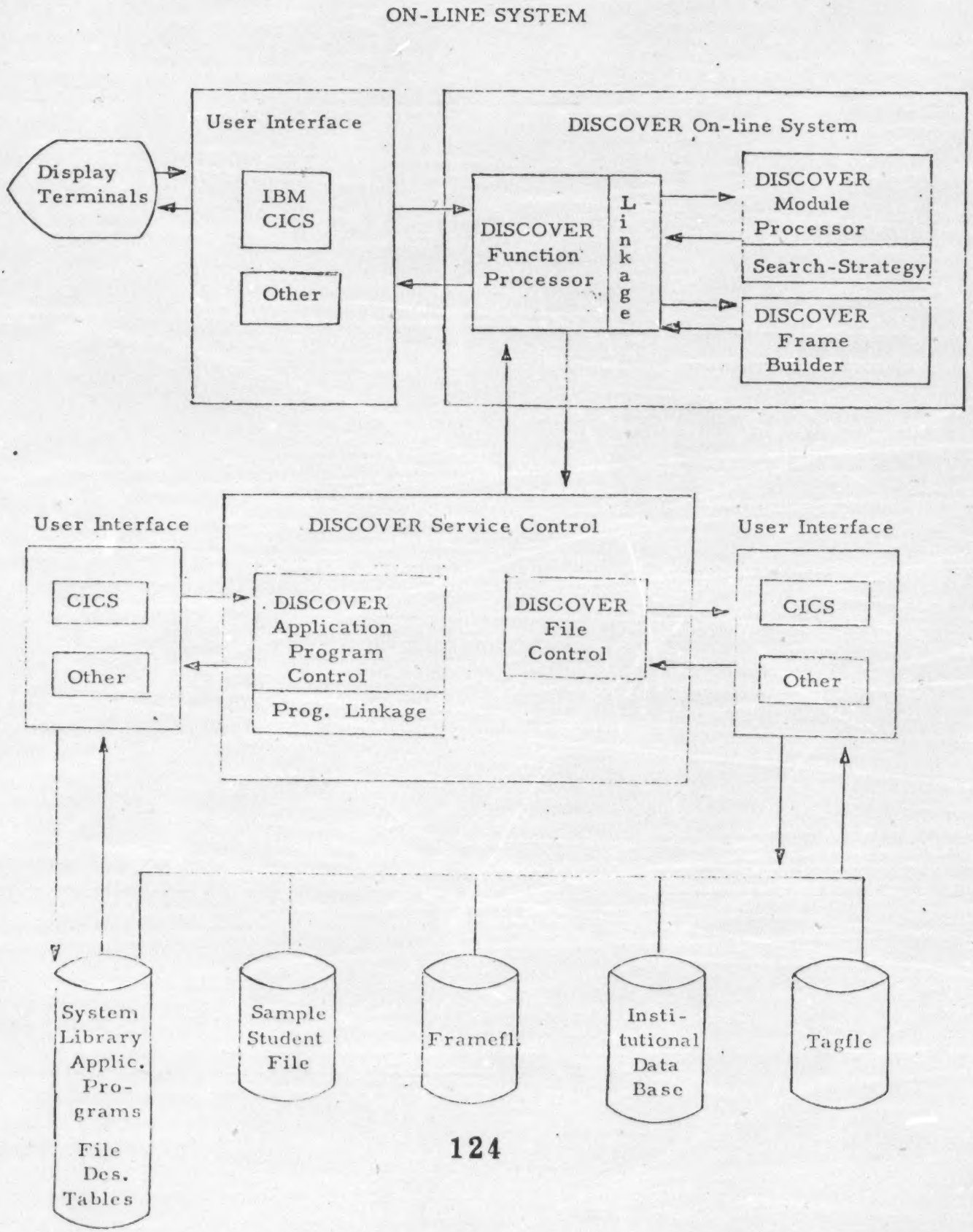
Jack Rayman
Guidance Development

JR:cr

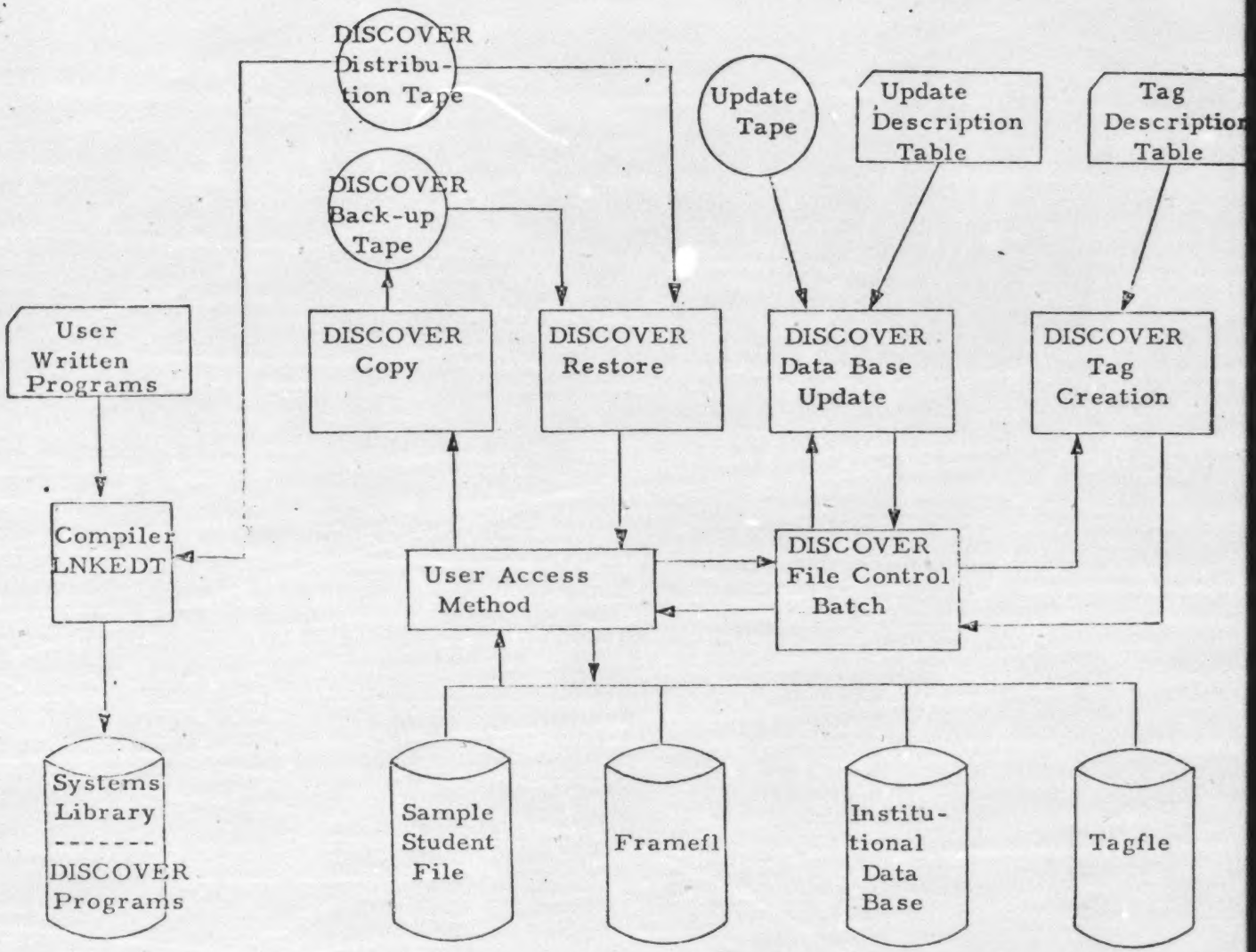
APPENDIX A

D'SCOVER System Flowcharts

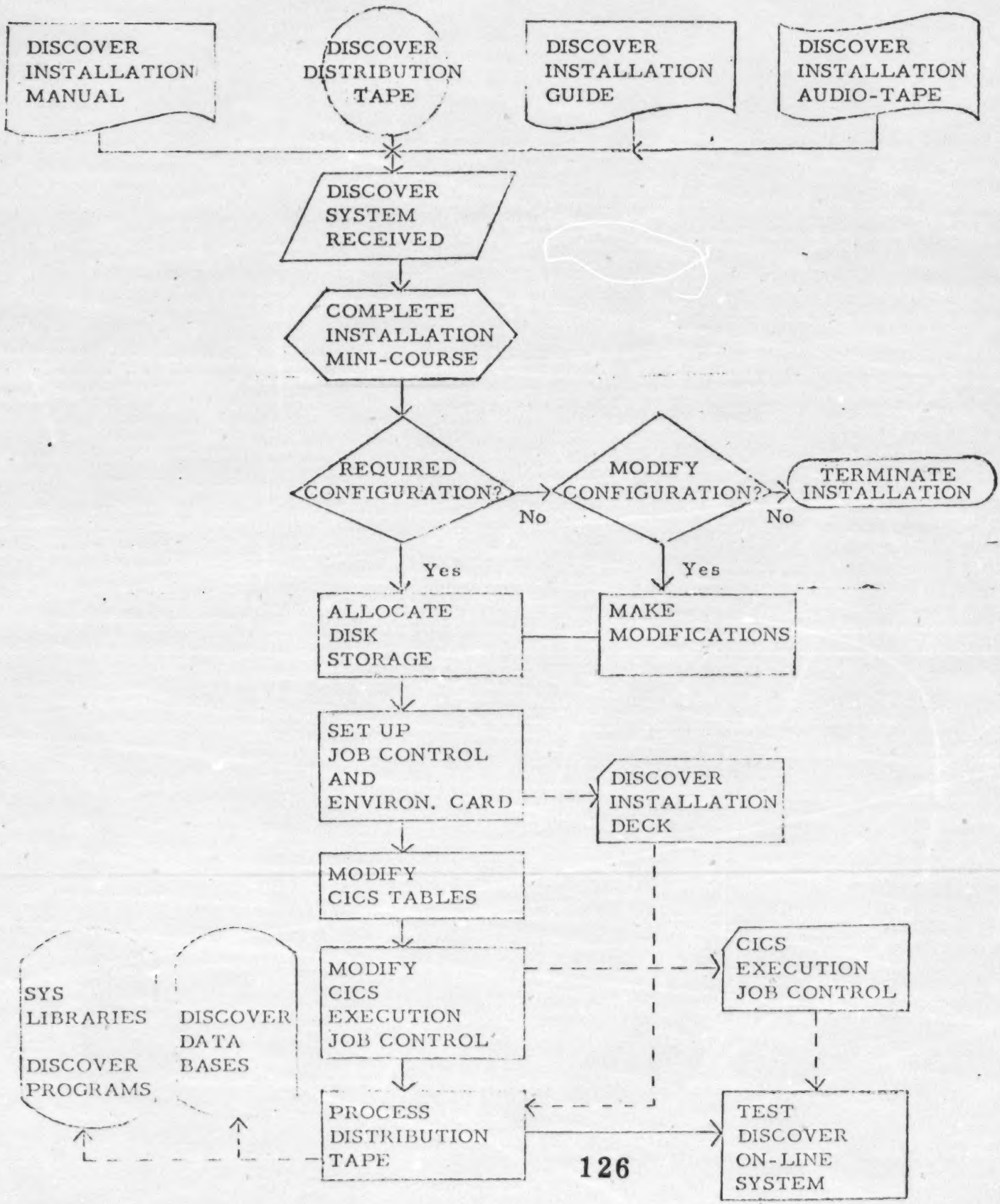
B. DISCOVER System Flowchart



BATCH SUPPORT SYSTEM



DISCOVER SYSTEM INSTALLATION DIAGRAM



APPENDIX B

Data Base Descriptions

DISCOVER FILE DESCRIPTION TABLE

File ID - Discover Student File (DSF) Code - S

Field Name	Segment #	Displ	Length (zero is variable)	Description
	Student Identifying Information		Segment #1	
SSEX	1	0	1	Student sex (male/female)
SSYR	1	1	2	Student year in school
SSEC	1	3	1	Student security code
SBIR	1	4	6	Student birthday
SNAM	1	10	0	Student name
	Student Plans	Segment #2		
SCPL	2	0	1	Students' college plans
SSLE	2	1	1	Student selected level of education
SDLO	2	2	0	Student Dynamic List of Occupations
	Student Plans	Segments #3 - 7		
SLCV	3	0	0	Student selection on college variables
SCMS	4	0	0	Student selection on college variables
SCSI	5	0	0	Student colleges specific information
SDRO	6	0	0	Student dream occupation
STSS	7	0	0	Student Technical/Specialized schools
	Student Use of System		Segments #8 - 11	
SDAT	8	0	6	Date last used system
SOFF	8	6	5	Discover sign off point
STIM	8	11	4	Total time on system
SDMU	8	15	23	Discover Modules used
SDMO	8	38	23	Discover Modules suggested order
SSIJ	8	61	0	Student sub-parts of information about jobs
SIDP	11	0	1	Number of correct answers on IDPT game
SIDN	11	1	1	Number attempts at IDPT game
SWEC	11	2	3	Number correct responses on Work Environment Classification game
SWEA	11	5	1	Number attempts at Classification game
SWEN	11	6	6	Names of Holland categories wrong in WEC game
SWYN	11	12	1	Yes-No choice on frame 83, module Ø1
	Student Test Data		Segments #12 - 18	
SASV	12	0	10	Scores on Armed Services Voc. Apt. Battery
SGAT	13	0	10	Scores on General Apt. Test Battery
SATV	14	0	5	Scholastic Aptitude Test - Verbal
SATM	14	5	5	Scholastic Aptitude Test - Math
SACT	14	10	4	ACT Composite Score
SGRV	15	0	5	Graduate Record Exam, verbal
SGRM	15	5	5	Graduate Record Exam, math
SHSC	16	0	9	Holland Summary Code

DISCOVER FILE DESCRIPTION TABLE - continued

Field Name	Segment #	Displ	Length (zero is variable)	Description
SHSV	16	9	1	Holland Summary Code - Viewed
SHSS	16	10	0	Holland sub-scale scores
SCDI	17	0	10	Sub-section scores on Career Development In
SWRV	18	0	10	Student assessment of work-related values
	Student Courses/Grades Segments #19 - 23			
SGPA	19	0	3	Student High School GPA
SRNK	19	3	0	Student High School Rank
SCRS	20	0	0	Student High School courses completed
SECA	21	0	0	Student extra-curricular activities
SPTJ	22	0	0	Student part-time jobs
SGPF	23	0	3	College GPA Freshman
SGPC	23	3	3	College GPA cumulative
	Student Data for Counselor Use Segment #24			
SKIL	24	0	7	Various student skills
SCIV	24	7	11	Information used in 4-year College (D5)
SMIS	24	18	0	Student miscellaneous
				(see page 4) List of Data Elements

DISCOVER FILE DESCRIPTION TABLE

File ID - Occupational Data Base Code - J

Field Name	Record ID Suffix	Segment #	Displ	Length (zero is variable)	Description
JF1A	1	1	0	0	What do people in this job do?
JF1B	1	2	0	0	Where do they work?
JF1C	2	1	0	0	What kinds of tools or equipment?
JF1D	2	2	0	0	What is the work setting like?
JF1E	2	3	0	0	Areas of specialization/related occupations?
JF2A	3	1	0	0	Possible ways of getting training?
JF2B	3	2	0	0	Licensing or certification?
JF2C	3	3	0	0	Personal qualities?
JF2D	4	1	0	0	What school subjects help prepare?
JF2E	4	2	0	0	Special physical requirements or ski
JF3A	4	3	0	0	What is liked or disliked most?
JF3B	5	1	0	0	Salary range?
JF3C	5	2	0	0	Opportunities for promotion? (graph
JF4A	6	1	0	0	What is the demand for people?
JF4B	6	2	0	0	How affected by technology, etc.?
JF4C	6	3	0	0	Seasons or geographical locations?
JF5A	7	1	0	0	Where to write for more information
JF5B	7	2	0	0	Books or pamphlets?

DISCOVER FILE DESCRIPTION TABLE

JNNN8 File ID - Occupational Data Base Code - J

Field Name	Segment #	Displ	Length (zero is variable)	Description
JSG5	5	0	0	All of Segment 5
JTLE	5	0	30	Job Title
JDOT	5	30	6	Dictionary of Occup. Title number
JACT	5	36	3	ACT cluster/family number
JCDT	5	39	2	Super Career Decision Tree number
JHOC	5	41	3	Holland Code
JETL	5	44	1	Educational training level
JPTJ	5	45	0	Related part-time jobs
JSG6	6	0	0	All of Segment 6
JILN	6	0	1	Income level - national
JILL	6	1	1	Income level - local
JHSG	6	2	0	High school subjects related
JSG7	7	0	0	All of Segment 7
JCCM	7	0	0	Community College majors related
JSG8	8	0	0	All of Segment 8
JKTZ	8	0	10	Weighting on Katz's values
JJAN	8	10	1	Job availability - national
JJAL	8	11	1	Job availability - local
JART	8	12	13	Available roads of training
JDOP	8	25	1	Opportunity for promotion
JSG9	9	0	0	All of Segment 9
JCPW	9	0	1	Job characteristics - Place of work
JCWS	9	1	1	Work setting
JCWT	9	2	1	Work tasks
JCWH	9	3	1	Work hours
JCRS	9	4	1	Responsibility
JCPR	9	5	1	Pressure on job
JCPD	9	6	1	Physical danger
JCSI	9	7	1	Social interaction
JCTV	9	8	1	Travel
JCES	9	9	1	Employment seasonalit

DISCOVER FILE DESCRIPTION TABLE

File ID - Frame File Code - 1

Field Name	Segment #	Displacement	Length (zero is variable)	Description
FTXT	1	0	0	Displayed text
RTBL	2	0	0	Response linkage
LINK	3	0	15	Sequential linkage, backspace, screen erase
LTBL	3	15	0	Loop counter, subroutines
ATBL	4	0	0	Keyword answer linkage
STBL	5	0	0	Save frame-id's and terminal input
MTBL	6	0	0	Merge fields into displays
CTBL	7	0	0	Search strategy support
PTBL	8	0	0	Application program support
UTBL	9	0	0	Update data-base fields from terminal input
KTBL	10	0	0	Save constants, move save areas

DISCOVER FILE DESCRIPTION TABLE

File ID - Temporary Work space File Code - W

Field Name	Segment #	Displacement	Length (zero is variable)	Description
SV01	1	0	0	Save area 1
SV02	2	0	0	Save area 2
SV03	3	0	0	Save area 3
SV04	4	0	0	Save area 4
SV05	5	0	0	Save area 5
SV06	6	0	0	Save area 6
SV07	7	0	0	Save area 7
SV08	8	0	0	Save area 8
SV09	9	0	0	Save area 9
SV10	10	0	0	Save area 10

DISCOVER FILE DESCRIPTION TABLE

File ID - Discover Tag File Code - T

Field Name	Segment #	Displacement	Length (zero is variable)	Description
THDR	1	0	30	Narrative description
TNUM	1	30	4	# of tags turned on
TTAG	1	34	0	Tag indicators

DISCOVER FILE DESCRIPTION TABLE

File ID - Institutional Data Base Code - C

Field Name	Segment #	Displacement	Length (zero is variable)	Description
CDA0	0	10	6	Data Input Field # 1
CDA1	0	16	579	Data Input Field # 2
CDA2	0	595	29	Data Input Field # 3

APPENDIX C

Administrative Applications

Advisory Board

Advisory Board Meeting June 24, 1975

Design Criteria

Administrative Functions

Advisory Board

PROJECT DISCOVER

Administrative and Counselor Support Subsystems

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DISCOVER Administrative Applications

Advisory Board Meeting

June 24, 1975

The meeting of the Advisory Board of DISCOVER Administrative Applications was attended by nine of the thirteen members. The following general decisions were made:

1. The DISCOVER Administrative and Counselor Support System should be designed as general as possible to make it compatible with existing systems and expandable to new applications.

2. The immediate development should be concentrated in the area of an instructional support system with possible future expansion into the areas of personnel, budget, inventory, etc.

3. The design should continue to seek to establish software independence.

4. The DISCOVER Administrative and Counselor Support System should be primarily an on-line system rather than batch processing and reporting.

The meeting resulted in identifying and prioritizing nine specific administrative functions to be developed. These are listed below in priority order. It was generally felt that the first five would be target tasks for the September 1975 - June 1976 funding period.

1. On-line access of Student Data Base including the ability to retrieve, update, add, and delete both records and fields within records.

2. On-line changing of schedules including adding and dropping of courses. This should be designed with current emphasis on individualized instruction in mind.

3. Master schedule maintenance.

4. Grade changes including updating and adding grades.

5. Limited on-line query capabilities on Student Data Bases and DISCOVER-related Data Bases.

6. Statistical reports on specified elements of the Data Bases.

7. On-line attendance control.

8. On-line test scoring capability.

9. On-line entry of course requests.

APPENDIX D

List of DISCOVER Programming Support Functions

Below is a list of DISCOVER Programing Support Functions. Those marked with an asterisk (*) were added and designed during the technical development and present functions not in the original plan.

On-line Frame-Building Support

Script editing and writing including:
- Pen detectable fields (immediate and delayed)
- Unprotected fields
- Highlighted fields
- Darkened fields
- Position cursor *
- Shift screen *
- Automatic Generation of frame linkage *
- Automatic Generation of branching *

Logic Table entry *
- (Support building of all tables associated with script frames)

Data Base support *
- Create records on all DISCOVER Data Bases
- Create, update, delete fields on Data Base Records

On-line Module Processor

Processing DISCOVER scripts:
- Browse scripts *
- TRACE (programs) *
- Link script frames
- Branch to selected frames
- Generate random frame keys *
- Save Input from terminal
- Merge frames and/or fields from records or save areas
- Save Screen Image
- Score Test *
- Save Constant associated with screen address *
- On-line Search Strategy
- Check Short Answers
- Loop within script frames *
- Branch and Return--script frames *
- Backspace--script frames
- Set Beginning frame *

On-line File Access (for all Data Bases)

Get fields from records
Update fields on records
Delete fields on records
Add fields to records
Browse records
Delete records
Add records

Batch File Access * (for all Data Bases)

Get fields from records
Update fields on records
Delete fields on records
Add fields to records
Browse records
Delete records
Add records

Batch File Maintainance

Copy DISCOVER files *
Create/Restore DISCOVER files *
Generalized Record Updating *
Generalized TAG Creation *

DISCOVER Program Tailoring *

(Tailors all DISCOVER programs to local environment)

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